**University of Alberta**

# The Cognitive Approach, Positive Aesthetics, and the Scientific Realism Debate

by

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# Abstract

This thesis uses concepts from the philosophy of science to examine two theories in natural aesthetics – the cognitive approach and positive aesthetics. One version of the cognitive approach, scientific cognitivism, holds that we require scientific knowledge in order to properly aesthetically appreciate nature. But the status of our scientific knowledge is called into question in two debates about realism in science. The debate between scientific realists and constructive empiricists concerns whether our scientific theories give us knowledge about unobservable entities, and may ultimately affect our aesthetic judgments. The second debate questions whether scientific stories about nature should be given a privileged status. The anti-realist challenge is to develop the cognitive approach in a way that does not privilege scientific knowledge. While both debates provide challenges, the cognitive approach proves remarkably flexible. Finally, this thesis uses the same debates to analyze positive aesthetics, the view that pristine nature is aesthetically good.

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# Introduction

The impetus for this thesis was provided by a rather simple question that occurred to me as I considered the claim that a necessary condition for properly aesthetically appreciating nature is having scientific knowledge about nature. This claim underlies the approach to natural aesthetics that I call *scientific cognitivism*. The simple question that occurred to me, then, was: What exactly is this scientific knowledge that we are told to consider as a necessary condition for the aesthetic appreciation of nature?

If there is no controversy surrounding the status of scientific knowledge claims, then scientific cognitivism can be assessed strictly on its merits as an aesthetic theory. But if there are different views about what sort of thing scientific knowledge is then we ought to investigate whether scientific cognitivism would be an adequate aesthetic theory given each of the alternative views about science. The actual situation is one in which there is no universal consensus about how we ought to understand the words 'scientific knowledge'. And so I believe it is worth asking my simple question and investigating scientific cognitivism in light of several contemporary views about science.

In the first chapter, I describe scientific cognitivism as an instance of *the cognitive approach* to aesthetics. I also describe some of the strengths of the broad cognitive approach to natural aesthetics and of scientific cognitivism in particular. I then go on to try to lend some credence to the idea that the scientific realism debate – here understood as a debate about the existence of microscopic entities and our epistemic stances towards those entities – might be aesthetically relevant. In this scientific realism debate we find the first signs of divergent views about scientific knowledge. Roughly, *scientific realists* believe that our scientific theories give us knowledge about nature right up to the level of microscopic entities we cannot perceive, while *anti-realists* contend that our theories cannot be said to provide us with this knowledge. At first glance, it may appear that there is no aesthetic issue at stake in this debate, since aesthetics is concerned with what we can perceive and microscopic entities are not perceivable. My task in the first chapter is to argue that because of the cognitive approach's reliance on non-perceptual facts and because of the particular mechanisms behind the cognitive approach, we cannot in principle rule out the possibility that facts about microscopic entities are at least sometimes aesthetically relevant. The chief proponents of scientific cognitivism generally think in terms of examples from natural history sciences or other 'low-level' fields of science and not in terms of examples from fields like theoretical physics. Again, it might be tempting to say that the force of the scientific realism debate can only be felt in these 'high-level' fields that worry about microscopic entities and that these fields are never relevant to aesthetic appreciation. My goal in the first chapter is to show that there is no principled reason to think that 'high-level' science could not be aesthetically relevant under scientific cognitivism.

In the second chapter I more fully describe the scientific realist view and its chief anti-realist competitor, *constructive empiricism*. I show how attractive an aesthetic theory scientific cognitivism is given a scientific realist's view of science, and how this attractiveness seems diminished given a constructive empiricist's view of science. Because the constructive empiricist chooses to remain agnostic about the existence of unobservable entities, I argue, there is a potential that she will miss out on some of the aesthetic experiences and judgments that are available to the scientific realist. All this depends, of course, on whether the scientific realist is correct about the knowledge imparted to us by our scientific theories! With that in mind, I develop a constructive empiricist response that simply welcomes the aesthetic consequence since it allows the constructive empiricist to avoid making risky ontological scientific commitments. I also suggest a drastic reinterpretation of scientific cognitivism that an anti-realist might undertake. This reinterpretation alters scientific cognitivism significantly, but nonetheless retains some of the underlying structure of the cognitive approach and many of its merits. It ultimately serves to demonstrate the remarkable flexibility of the cognitive approach.

In the third chapter I leave behind the scientific realism debate concerning microscopic entities to consider a more radical view about scientific knowledge. This is the view debated in the so-called "science wars" about whether science gives us objective knowledge at all, or if science's knowledge claims should really be regarded any more highly than knowledge claims advanced by other social institutions. Since scientific cognitivism relies heavily on scientific knowledge, it is immediately apparent that this more radical view – which I call *anti-scientism* – poses a serious challenge to it. I distinguish between two sorts of anti-scientists, namely those who would do away with science entirely (and so also with scientific cognitivism) and those who seek to supplement science with other 'stories' about nature. For this latter group, employing the cognitive approach would involve arguing that cognition of these other stories (along, perhaps, with some scientific knowledge) is a necessary condition for aesthetic appreciation. In other words, this group proposes doing away with a specifically *scientific* cognitivism in favor of applying the cognitive approach to natural aesthetics in a way that doesn't privilege science. I explore the possibility of re-construing the cognitive approach along these lines, coming to the observation that it would be essential here to determine which non-scientific stories are appropriate to listen to. But establishing the boundaries of appropriateness for stories is a difficult task, and, I argue, no matter how the anti-scientist tries to accomplish it the cognitive approach so re-construed will end up weaker than the original scientific cognitivist version.

In the fourth chapter I move away from the cognitive approach to discuss another contemporary view in natural aesthetics called *positive aesthetics*. This is the view that pristine nature (i.e. nature that has not been altered by human beings) is or appears to be aesthetically good. The argument for positive aesthetics that I consider is also science-based, and so I inspect it through the three lenses – those of scientific realism, constructive empiricism, and anti-scientism – I introduced in previous chapters. The science-based argument for positive aesthetics tries to draw a connection between the way science categorizes nature and the way that we experience positive aesthetic qualities. I argue that coupling the positive aesthetics view with a scientific realist outlook forces us to take on some possibly undesirable theoretical baggage, and so an attempt to conjoin the two views is strained. In contrast, the constructive empiricist view and the positive aesthetics argument resonate well with each other in terms of how they view science. The anti-scientist has rather a harder time using the argument for positive aesthetics since now the role played by science must also be played by some other non-scientific stories, and it is less certain that such a view will justify positive aesthetics.

An assumption I maintain throughout is that the decision to adhere to any one of these philosophical views about science ought to take priority over aesthetic considerations. That is to say, we should not adopt a particular view of science just because doing so will lead us to have a more robust aesthetic theory at our disposal. The aim of the project is thus to see how flexible scientific cognitivism, the cognitive approach to natural aesthetics, and the science-based positive aesthetics view are, and to investigate whether they can serve us equally well no matter which view of science we choose to adopt.

# Chapter 1: The Cognitive Approach, Scientific Cognitivism, and the Relevance of the Scientific Realism Debate

## Introduction

A recently developed way of approaching the aesthetics of nature involves focusing on the role played by an appreciator's knowledge about nature. I will refer to this sort of approach as *the cognitive approach* to natural aesthetics. According to the best-developed version of the cognitive approach to natural aesthetics, in order to fully and properly aesthetically appreciate nature, we ought to use scientific knowledge to tell us about the categories under which would-be objects of appreciation should be perceived. Following Glenn Parsons, I will call this version of the cognitive approach *scientific cognitivism*.[1] My concern in this thesis is whether the cognitive approach in natural aesthetics, generally, and scientific cognitivism, more particularly, can be effectively applied no matter what sort of view we have about scientific knowledge. Speaking broadly here, there are a variety of different views about the aim of science and the nature of scientific knowledge that are contested in debates between scientific realists and anti-realists of sundry stripes. Since applying the scientific cognitivist version of the cognitive approach requires having scientific knowledge, it is an open question whether the approach can provide us with an adequate aesthetic theory when coupled with any view of what science aims for and on any view of what scientific knowledge is. On the surface, it seems that scientific cognitivism may need to be reinterpreted or even abandoned depending on the outcomes of debates about scientific realism. It is also an open question whether the cognitive approach can be adequately developed in a way that does not make *scientific* knowledge a necessary condition of the aesthetic appreciation of nature. My central aim is therefore to critically evaluate both scientific cognitivism and the cognitive approach to natural aesthetics in light of these different views about science to see whether they retain their appeal independently of the stances we adopt towards science.

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[1] See Parsons (2002) and (2006) for the use of this label.

In this chapter I will begin by giving some background information about the cognitive approach to natural aesthetics. This will involve explaining that the cognitive approach to natural aesthetics is just one example of a more general approach in aesthetics that emphasizes the importance of having knowledge about objects of appreciation. The more general cognitive strategy was originally introduced for an analysis of the aesthetics of art. After explaining how a version of the cognitive approach works in art appreciation, I will show how it has been modified into scientific cognitivism to be made applicable to nature appreciation. Then I will expound some of the merits of both scientific cognitivism and the cognitive approach in natural aesthetics. I will continue by introducing the basic issue at stake in the standard scientific realism debate. Finally, I will conclude this chapter by considering whether it is even worth asking about whether the scientific realism debate could affect our aesthetics; I will do this by focusing on one sort of argument that challenges the view that the scientific realism debate can be relevant to aesthetic appreciation.

## The Cognitive Approach and Art

A stark contrast to the cognitive approach to aesthetics can be found in formalist approaches to aesthetics, according to which objects of appreciation should be evaluated merely in terms of the formal elements that can be perceived in them, without any regard for the content or historical situated-ness of the objects. The cognitive approach, then, looks to more than formal elements that can be directly perceived in objects, arguing that some background information or knowledge about the objects of appreciation is necessary for proper aesthetic appreciation. Two motivations behind the cognitive approach are the idea that objects really are more than collections of formal elements, and the idea that in order to properly appreciate something we must appreciate it for what it really is.

Cognitive approaches to aesthetics were first developed in the realm of art. One art-based cognitive approach that has been influential for later theorists about nature can be found in Kendall Walton's analysis of the aesthetics of art. Walton's approach can properly be called *cognitive* because, as we shall see, it stresses the importance of having knowledge about works of art that serve as objects of appreciation. One of Walton's chief concerns in his "Categories of Art" (1970) is to show that we perceive works as falling under certain categories of art: "Such categories include media, genre, styles, forms, and so forth – for example, the categories of paintings, cubist paintings, Gothic architecture, classical sonatas…" (p. 56). So, when I perceive a certain work of a[illegible] I see it as a painting or hear it as a sonata. This perception need not involve conscious recognition or making a thoughtful inference about the work of art, but simply involves a continuous experience of the work as an instance of the category. Walton admits that categories can be broad or narrow, and so we may simultaneously perceive a work as falling under more than one category. (For simplicity's sake, in my exposition in this section I will assume that a work neatly falls under only one category.)

Walton uses this notion of categories of art to develop his psychological thesis, which holds that the aesthetic properties a work of art appears to us to have depend strongly on the categories we perceive the work as falling under. Features of works of art, says Walton, will appear to us as either standard, variable, or contra-standard with respect to the category we perceive the work under. A feature is standard with respect to a category if it is a feature that helps us recognize or perceive the work as falling under the category. 'Having a flat surface' is a feature standard with respect to impressionist paintings. A feature is variable with respect to a category if it is unrelated to the work's belonging to the category. 'Exhibiting the color blue' is a feature variable with respect to impressionist paintings. Finally, a feature is contra-standard with respect to a category if it is a feature that normally would tend to make us think the work possessing it doesn't belong to the category in question. 'Having three-dimensional objects protruding from its surface' is a feature contra-standard with respect to impressionist paintings.

With all this in mind, we are in a position to understand a bit more about how the psychological thesis works. Because I perceive a work of art under the category 'painting', I pay no attention to features in the work that are standard for paintings (e.g. its having a flat surface), but I do pay attention to features that are variable for paintings (e.g. the colors used). Thus, to cite one of Walton's examples, if we view Picasso's "Guernica" as a painting, its colors, the shapes represented in it, and other variable features give us the aesthetic impression that the work is "violent, dynamic, vital, [and] disturbing" (p. 62). But if we imagine a society that does not have the category 'painting' at all, but instead has the category '*guernica*' – where *guernicas* are works that resemble Picasso's "Guernica" in colors and shapes represented, but have surfaces that protrude upward from the canvas – then we will come up with a different aesthetic assessment of "Guernica." To those in this imagined society, "Guernica" will probably appear to be "cold, stark, lifeless, or serene and restful" (p. 62). This is because some features, like flatness, that are standard with respect to paintings are variable with respect to *guernicas*, and vice versa. This example helps us understand Walton's psychological claim that the aesthetic judgments that we will make about a work of art depend strongly on the categories we perceive the work as falling under.

Walton's cognitive approach also involves what he calls a philosophical component. It is not just that we perceive works as falling under categories that affect our aesthetic evaluations of them, but works of art really do belong to certain categories. There truly are sculptures and paintings, not just perceived sculptures and paintings. Normatively, then, we should perceive works as falling under their correct categories. If I try to perceive a work that belongs to one category as a member of a different category, I will miss the mark in my aesthetic appreciation. For example, if my choice of categories under which to perceive a sculpture is not guided by appropriate knowledge, I may focus on its monochromaticity, and so judge it to be dull and insipid. But clearly this is a mistaken way of appreciating sculptures. Had I known to perceive the work in the correct category – 'sculpture' – I would have applied more appropriate criteria in making my aesthetic judgment. From this example we can see that having correct knowledge about the categories to which works of art belong is crucial to aesthetic appreciation of the works. This reliance on knowledge is what distinguishes cognitive approaches in aesthetics. But what sort of knowledge is this, where does it come from, and how can we obtain it?

On Walton's account about works of art, there are four circumstances that help us determine whether a category is correct for perceiving a work of art. First, the work should have a "relatively large number of features standard with respect to" the category in question (p. 69). Second, the work should appear better or more aesthetically pleasing when viewed in the correct category.[2] Third, the work is probably correctly perceived in the category its creator intended it to be perceived in. Finally, the work is probably correctly perceived in the category that the art-critical society in which it was created generally places it. Paying attention to these four circumstances helps us to determine what the work of art really is, and so to determine the categories to which it belongs.

At this point, I want to focus especially on the last two circumstances to emphasize the idea that knowledge of non-perceptual facts about works plays an especially important role in Walton's theory. As the "Guernica" case shows, merely looking at the perceptual features in a work that are standard with respect to categories will not always help us to identify the work's correct categories; sometimes a work may have sundry features that are each standard with respect to different categories, and employing these different categories would lead us to conflicting aesthetic responses. The third and fourth circumstances maintain that a work (like "Guernica") that has features standard for paintings is correctly perceived as a painting just so long as a) its creator intended it to be a painting, and b) it was created in a society that recognizes painting as a category of art and recognizes the work as a painting. What I wish to stress here is that facts about the work's artist and the society in which it was created cannot be directly perceived in the work of art. So it is knowledge of some *non-perceptual facts* about works of art that is required to adequately underwrite our aesthetic appreciation of art. This reliance on non-perceptual facts about works of art sets Walton's account apart from accounts that attempt to evaluate works based only on what can be directly perceived in them.[3] In the end, Walton's cognitive approach provides us with an aesthetic theory that emphasizes the role played by knowledge about non-perceptual facts concerning works of art. We can summarize the cognitive approach in art by saying that it adheres to the following three claims:

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[2] The second circumstance plays an important role later in this chapter when I consider Glenn Parsons' response to a problem scientific cognitivism faces.

> (C1) To properly aesthetically appreciate an object X, we must perceive X as what it really is.
> (C2) To perceive X as what it really is, we must perceive X under the correct category or categories.
> (C3) We can determine the correct categories for works of art by (among other things) learning about their designers' intentions and by querying the art-critical societies in which they were created.

## The Cognitive Approach and Nature

When it comes to appreciating nature Walton's approach cannot provide the whole story. This is simply because we cannot establish facts about the categories intended by nature's creator – that there is such a creator is not universally acknowledged, and even among those who do acknowledge a creator, that creator's intentions are generally seen as inscrutable; moreover, it is pointless here to consult an art-critical society, since nature is not art. Unlike in the art case, in nature we seemingly have no easy way of determining which non-perceptual facts should be the ones to help us come up with the categories for perceiving natural objects. This is a conundrum for natural aesthetics. Unless there is a way to determine the correct categories for nature appreciation, we shall have to admit that Walton's cognitive approach cannot be fully transferred from the realm of art to that of nature.[4]

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[3] Note that one could propose a version of the cognitive approach to art that would rely only on knowledge of perceptual facts about works of art. But here Walton is chiefly concerned with disproving Monroe Beardsley's view, which in turn seeks to avoid committing the 'intentional fallacy' with respect to works of art. See (Walton, 1970, pp. 53-55) and (Beardsley, 1958, pp. 17-29).

It is the hallmark of scientific cognitivism to turn to the natural sciences to help establish the correct categories for aesthetic appreciation. On this sort of view, the natural sciences provide us with aesthetically appropriate non-perceptual facts about natural objects[5], playing a role analogous to non-perceptual facts about artists' intentions and the critical community in art appreciation. Because knowledge is also essential to scientific cognitivism, it can properly be called a version of the cognitive approach in natural aesthetics. Scientific cognitivism has won over many supporters in the last few decades, including philosophers such as Holmes Rolston III, Yuriko Saito, and Patricia Matthews. But scientific cognitivism was first and, I think, best articulated by Allen Carlson, so it is usually his position that I will focus on, though I will also consider variations of the approach expressed by others. Scientific cognitivism can be summarized in a list of claims similar to those introduced above for Walton's art theory:

> (SC1) To properly aesthetically appreciate an object X, we must perceive X as what it really is.
> (SC2) To perceive X as what it really is, we must perceive X under the correct category or categories.

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[4] Walton's psychological thesis could certainly be brought into a theory of natural aesthetics independently of his philosophical thesis. On my view, a theory that only makes use of Walton's psychological thesis (i.e. the categories apparatus he employs) is only weakly cognitivist since it tells us that our *beliefs* about objects play some important role in how we aesthetically appreciate, even though it does not insist that we have *knowledge* about objects. For more on this issue, see especially my discussion of the 'no-truth' strategy in Chapter 2 and my distinction between belief-cognitivism and knowledge-cognitivism, as developed in Chapter 3.

[5] Allen Carlson, in particular, often says that the knowledge we should employ in aesthetically appreciating nature includes both scientific and common-sense knowledge. The two can be seen as operating on the same spectrum. This gets Carlson around certain objections that his view is overly intellectual or leaves out many valid, ordinary sorts of aesthetic appreciation. For my present purposes, I am interested only in the extremely scientific end of the spectrum, and so omit discussion of common-sense knowledge.

(SC3) The natural sciences tell us what the correct categories are for natural objects.

Scientific cognitivism tells us that the natural sciences give us categories that function in nature appreciation in much the same way that art categories like 'painting' and 'sculpture' function in art appreciation. Thus, Walton's psychological thesis also holds with respect to nature: our aesthetic assessment of natural objects will change depending on the categories we perceive them as falling under. Further, Walton's philosophical thesis is applicable to nature: there are correct categories for perceiving natural objects. Knowing that a certain natural object belongs in the category 'giraffe' (and not in the category 'horse') helps us to make the correct sorts of aesthetic judgments about it, and knowing that something belongs in the category 'moose' and not in the category 'deer' helps us avoid aesthetic errors. If we supposed the giraffe were a horse, we might judge it as gangly, spindly, and maladroit; if we supposed the moose were a deer, we might assess it as aesthetically "awkward" (Carlson, 2000, p. 89). But we would be quite wrong to make these judgments, for, as the natural sciences inform us, this really is a giraffe and that really is a moose. In this way, the natural sciences tell us the correct categories for perceiving natural objects; to properly aesthetically appreciate those objects we must perceive them under the categories science provides. Note that the scientific knowledge that is required to come up with these categories is often, as in the art case, knowledge of non-perceptual facts such as systems of biological and geological classification. Relevant non-perceptual facts may also include non-perceptual facts about the evolutionary history of a natural object.

Scientific cognitivism mirrors Walton's theory in art in many respects. The crucial difference is that where Walton looks to artists' intentions and an art-critical society to help establish what a work really is, scientific cognitivism turns to scientific knowledge to help establish what a natural object really is. In the rest of the thesis I do not want to call into question the basic structure of the cognitive approach that Walton introduces. Instead, I will investigate whether the reliance on science in natural aesthetics raises problems for scientific cognitivism and, later, whether a non-science-based version of the cognitive approach can be fruitfully developed. My suggestion is that different views about science, as articulated in debates over scientific realism, might cause us to have to interpret scientific cognitivism and/or the cognitive approach to natural aesthetics differently. I will begin by considering the classic scientific realism debate, a disagreement about how we should view the aims of science and the statements that our scientific theories make about unobservable entities. Before proceeding with this investigation, however, I wish to raise and address two preliminary issues; this task occupies the rest of this chapter. First, I wish to more fully describe the scientific cognitivist version of the cognitive approach by discussing some of its merits – the merits that it should retain under different views of science if we are to view it as successful. Second, I wish to consider whether it is even worth asking about the scientific realism debate in connection with scientific cognitivism. It might be suspected that the two are unrelated, inasmuch as scientific cognitivism's reliance on science may not be a reliance on aspects of science that are relevant in the scientific realism debate.

## Some Merits of Scientific Cognitivism and the Cognitive Approach

What is it that is so appealing about scientific cognitivism and the cognitive approach? And what essential merits must a version of the cognitive approach be able to retain if it is reinterpreted under different conceptions of science? I offer some suggested answers to these questions in this section in order to further introduce and explicate these aesthetic theories, and also in order to provide a list of desiderata to appeal to later in evaluating different interpretations of scientific cognitivism and the cognitive approach. I don't pretend that this is anything like an exhaustive list of the strengths of scientific cognitivism or the cognitive approach, but the following are some of their most compelling assets:

(1) Scientific cognitivism gives us reasons to have *confidence* in the aesthetic judgments we make. By saying that some categories are correct for viewing natural objects and by claiming that, using scientific knowledge, we can successfully identify and deploy these categories, scientific cognitivism assures us that we can make correct aesthetic judgments about nature. Among other things, this means that we end up appreciating natural objects for what they really are – a point that is stressed by both Carlson and Saito[6], and that I emphasized in the three cognitivist claims above. If we correctly employ scientific cognitivism, our aesthetic appreciation of natural objects is not misguided. Therefore, if we employ this approach we can avoid skepticism about our ability to make aesthetic judgments about nature.

(2) Hand in hand with giving us confidence in our aesthetic judgments, scientific cognitivism assures us that our judgments are in some sense *objective*. Though we may not want to push this too far, we could say that at least for people with similar cultural backgrounds, aesthetic evaluations can be made on a common playing field. There is no radical subjectivism in aesthetic judgments because scientific cognitivism appeals to the shared scientific beliefs of the community in establishing the correct categories for the

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[6] While Carlson emphasizes the cognitive importance of perceiving objects as what they really are, Saito emphasizes the *moral* importance of perceiving and evaluating natural objects as what they really are. See (Saito, 1998), for more.

aesthetic appreciation of nature. Thus our aesthetic judgments about nature are not mere subjective matters of taste.

(3) As already mentioned, scientific cognitivism also provides us with an aesthetic theory of nature that is *analogous to aesthetic theories of art*. Art and nature differ in some crucial respects, of course, and so the aesthetics of art and the aesthetics of nature must also differ.[7] But as far as possible, it is desirable to maintain the analogy between the two branches of aesthetics. It is historically noteworthy that the lack of such an analogy led the field of natural aesthetics to remain underdeveloped until quite recently. It was believed that the lack of a parallel between the appreciation of nature and the appreciation of art meant that our aesthetic judgments about nature must be helplessly subjective, and so might not belong in a theory of aesthetics at all! But if the cognitive approach can help us maintain an analogy here between art and nature, then we end up with a more unified account of aesthetic appreciation.[8]

(4) Scientific cognitivism seemingly follows in the tradition of Aldo Leopold by combining with and working nicely alongside concerns in environmental ethics.[9] Aesthetic appreciation is a way of valuing natural environments, and valuing nature is also a chief concern for environmentalists. If both use scientific knowledge as a common base, aesthetics and environmentalism may join forces. For example, Carlson notes that landscape assessors and planners may make use of a science-based theory of natural aesthetics in order to better align their work with their ecological concerns. Thus,

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[7] The most obvious differences between nature and art are the ones already alluded to: In the case of art, there is clearly a historically-situated artist whose intentions we can query, while in the case of nature we remain philosophically ignorant of any parallel. Similar considerations hold for an art-critical society.

[8] For useful discussions of these historical issues see (Hepburn, 1966) and (Carlson & Berleant, 2004).

[9] See (Leopold, 1949) and (Callicott, 1987) for more about this tradition.

scientific cognitivism can be *a strong ally of environmentalism*, and put to great practical use in conservationist and environmentalist circles.

(5) Both the cognitive approach and scientific cognitivism give us a way of *sustaining our aesthetic attention*. Instead of having fleeting, stagnant moments of aesthetic appreciation – as we might if we were formalists – employing the cognitive approach continually enriches our aesthetic experience. Marcia Muelder Eaton (1998), a philosopher friendly to the cognitive approach, puts it this way: "Knowledge redirects attention, which motivates a desire for more knowledge, which redirects attention, and so on…" (p. 89). This continual enriching of aesthetic appreciation can also play into environmental concerns by directing our attention to further knowledge about natural objects, for instance by directing us to an awareness of the future fates of natural objects.

(6) The cognitive approach gives us *a way of identifying information that is relevant to aesthetic appreciation*. There are probably an infinite number of facts about any given work of art; but viewing the work under categories helps us focus our attention on the features that matter aesthetically. Likewise in the case of nature: Scientific cognitivism gives us a way – by using science – to focus our attention on the aspects of natural objects that are relevant to our aesthetic appreciation of the objects. Although I mention this here as a merit of the cognitive approach, it may not be immediately apparent that scientific cognitivism provides this benefit with respect to nature as well as (for example) Walton's view does with respect to art. In the last few sections of this chapter I consider a challenge to scientific cognitivism that maintains that it in fact does not possess this merit when it comes to appreciating nature.

Again, this list likely only mentions a small fraction of all the possible advantages of employing scientific cognitivism or the cognitive approach to natural aesthetics. But I take it that the cognitive approach to natural aesthetics, however it is to be interpreted, is strongest if it retains these merits.

### The Scientific Realism Debate and Scientific Cognitivism

The first preliminary aside, I wish now to say a bit more about my overall purpose in this project and raise the second preliminary issue. On one level, which I will consider more fully in the next chapter, the scientific realism debate primarily concerns questions about the existence of microscopic or unobservable entities.[10] It is tempting to say, at first glance, that the microscopic, unobservable entities that together make up the macroscopic objects of our appreciation must themselves be aesthetically irrelevant. On the one hand, since they are unobservable, they cannot themselves be objects of aesthetic appreciation. On the other hand, when I aesthetically appreciate a natural object, I pay attention to the features I can see, hear, taste, smell, and feel. Entities such as electrons and quarks are besides the point in my aesthetic appreciation of the macroscopic object; whether they exist or not seems irrelevant to my appreciation.[11]

But we should not come to this latter conclusion too quickly. After all, the cognitive approach explicitly endorses the view that non-perceptual facts about objects crucially affect the categories under which we do and should perceive objects. It may be the case, then, that non-perceptual facts about the unobservable entities that make up macroscopic objects are among the non-perceptual facts that should help us determine the categories we employ in aesthetic appreciation. So whether unobservable entities are themselves objects of aesthetic appreciation is not the issue; rather, the issue is whether knowledge about unobservables affects the categories we employ when we perceive natural objects.

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[10] More broadly construed, the scientific realism debate also concerns the issues raised in Chapter 3, viz. questions about the privileged position science should have. My concern in the rest of this chapter, though, is just to motivate the narrower discussion in Chapter 2.

[11] Cf. Eaton's discussion about aesthetic experience: "one has to see (or hear or smell or in some way directly perceive) something for oneself in order to have an aesthetic experience of the feature in question…" (Eaton, 1998, p. 91).

Before proceeding, perhaps I should emphasize that in this discussion 'non-perceptual' and 'unobservable' are not meant to be coextensive concepts. Non-perceptual facts about an object include such facts as the artists' intentions (if any) for the object, the particular history of an object, and any other facts about an object that cannot be perceived by simply looking at, listening to, etc. the object, no matter how intently the task of perceiving is undertaken. Facts about the microscopic substructure of objects or about the unobservable entities that compose objects are certainly a subset of non-perceptual facts, but there are many more non-perceptual facts about objects than will be discussed in the scientific realism debate. So, what I am specifically concerned to investigate is *whether non-perceptual facts about unobservable entities can be aesthetically relevant*. All that has so far been established is that in employing the scientific cognitivist version of the cognitive approach *some* non-perceptual scientific facts – but not necessarily the ones involved in the scientific realism debate – are important to our aesthetic appreciation of natural objects.

If some non-perceptual facts about natural objects are crucial to aesthetic appreciation, then facts about the unobservable entities that science, in some sense, describes for us and tells us constitute those objects may very well be among those crucial to aesthetic appreciation. Thus, perhaps what we mean by 'in some sense' in the preceding sentence is quite important in natural aesthetics. How are we to view those unobservable entities and the statements science makes about them? These are the issues debated between scientific realists and anti-realists; I will consider these sorts of questions in the next chapter. For the moment I leave it only as a suggestion that non-perceptual facts about unobservables may be aesthetically relevant. It is essentially this suggestion that fuels the discussion to follow, and so I will spend the rest of this chapter defending the suggestion against one sort of challenge it faces.

## The Relevant-Categories Problem

One way of approaching the issue I want to address is to consider the following question: How do we decide which of the myriad categories that the natural sciences give us for classifying natural objects are aesthetically relevant? Here it will not do to merely look at the features an object has and evaluate whether they are standard with respect to certain categories, for presumably all the categories provided by science will apply equally well by making certain features standard with respect to each of the potential categories.[12] In the art case, we employ those categories that artists intend or that our art-critical society deems appropriate. But as I have already mentioned, there are no precisely similar analogs for artists and an art-critical society in the case of nature appreciation. The scientific cognitivist examples we have already seen use biological classifications like 'giraffe' and 'mammal'… But these are certainly not the only sorts of categories the scientific community describes for us. It also talks about categories like

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[12] So the situation here will resemble Walton's imagined "Guernica" scenario in that more than one proposed category gives a reasonable way of accounting for and demarcating (between standard, variable, and contra-standard) the features an object of appreciation possesses. We might say, more generally, that aesthetic categories are underdetermined by the evidence provided by their perceptual features. Some other considerations must decide the case. See (Walton, 1970, p. 63).

'quark' and 'electron' in the microscopic realm. Who is to say that these are not aesthetically relevant categories? And how do we go about choosing the categories under which to view natural objects so as to aesthetically appreciate them? I will refer to this as the ***relevant-categories problem***. Patricia Matthews (2002), another scientific cognitivist, poses the relevant-categories problem in the following way:

> But we do not have guidelines indicating which features uncovered by science are relevant, nor does science itself offer any rules for appreciation. So, given all the natural sciences, which is relevant to aesthetically appreciating a flower: physics, botany, ecology, chemistry? Each tells us something true, but is it relevant to our appreciation? And is one piece of information more relevant than another? (p. 38)

Malcolm Budd, a philosopher opposed to scientific cognitivism, similarly contends that we need a "criterion of correctness" (Budd, 2000, p. 143) to establish that Walton's philosophical/normative thesis for categories of art holds for categories in nature as well, and says:

> we often delight aesthetically in natural items that we perceive only under highly general concepts (flower), not as instances of the specific kinds they exemplify (orchid), or under one concept (flower), but not another coextensive concept that expresses a deeper understanding of the nature or function of the kind (sexual organ of plant). This brings out a lack of clarity in the idea of appreciating a natural thing as the natural thing it is, for any natural thing falls under more or less specific concepts of nature, and can be appreciated under concepts that express a greater or lesser understanding of it (Budd, 2002, p. 96).

Strictly speaking, these two thinkers express different versions of the relevant-categories problem. Matthews asks which of the natural sciences we should consult, while Budd considers the level of specificity we should seek when trying to find the appropriate categories from within a single branch of science. For my purposes, I will treat of these two versions of the relevant-categories problem together, for what I am interested in are our strategies for finding the relevant categories for the aesthetic appreciation of nature, whether those categories are broad or specific.[13]

Scientific cognitivism must find some way to address the relevant-categories problem, for without some sort of "Budd criterion", we will find ourselves inundated with categories provided by the sciences that may or may not be aesthetically relevant. To see why this is problematic, consider again the case of art. One could distinguish between innumerable categories of art based on such considerations as the weight of canvasses, the height of canvasses, the duration of musical compositions, the chemical composition of printer-ink used in printing a great novel, and so on. But none of these features are (we suppose) aesthetically relevant. Instead we perceive artworks under such categories as 'painting', 'sculpture', 'composition', and under more specific categories like 'Pre-Raphaelite painting', 'impressionist painting', 'post-impressionist painting', and so on. But why do we employ these categories and not the others? The answer, as we have seen, is that these are the categories that are intended by artists and that our art-critical society recognizes. Had we no artists or art-critical societies to tell us where to direct our attention in works of art, we would be hopelessly inundated with potential categories of art appreciation. Psychologically, this might not prove to be too troublesome; we could simply pick the categories we want. But, as we have seen, Walton's thesis about categories in art includes a philosophical/normative component as well: Some of the categories we choose to employ are the *right* ones for viewing works of art, and others are *wrong*. It is at this philosophical level that artists' intentions and the evaluations of an art-critical community come into play; they help determine the correctness of categories.

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[13] Since I am concerned about whether facts about unobservables are aesthetically relevant, it is both important to consider whether the branches of science (e.g. physics) that deal with unobservables can be aesthetically relevant, *and* it is important to consider whether the particular theories within those branches that deal with unobservables can make an aesthetic difference.

If we return now to nature, we can see the importance of having some criteria on the philosophical level for choosing which categories are correct for viewing and aesthetically appreciating objects. On a mere psychological level we might have no trouble choosing some categories to guide our aesthetic appreciation of nature. Again, we could just pick whatever categories we want. But how are we to determine that these are the *correct* categories? Budd again: "The problem is: What determines which concept or concepts are the correct concept or concepts under which a natural item is to be perceived?" (Budd, 2000, p. 143). And although the natural sciences, according to scientific cognitivism, play a role analogous to the role played by artists and the art-critical society in Walton's theory, the analogy seemingly breaks down when we try to consider how the natural sciences can give us the relevant categories for aesthetic appreciation. The relevant-categories problem is that the natural sciences seem to give us *too many* categories, both by giving us different scientific descriptions of the same objects (consider how a particle physicist, a botanist, and a chemist might all describe a flower differently) and by not telling us at what level of specificity to stop within one of those descriptions.

## Scientific Cognitivist Responses to the Relevant-Categories Problem

Various sorts of responses to the relevant-categories problem have been offered by scientific cognitivists. My main goal in the rest of this chapter is to consider some of the scientific cognitivist strategies for addressing the relevant-categories problem, while keeping an eye particularly on the issue of the relevance of facts about unobservable entities. To that latter end, after describing each scientific cognitivist response, I will also look at what the response implies for the unobservable (and hence for the scientific realism debate).

In some places, Carlson seems to take for granted that we can easily find categories in the natural sciences that will correspond to the ones we use in aesthetically evaluating art. His concern is to argue that scientific knowledge of some sort can provide the base of non-perceptual facts needed to underwrite proper aesthetic appreciation of nature. The sorts of scientific knowledge include "astronomy, physics, chemistry, biology, genetics, meteorology, geology [and] the particular explanatory theories within these sciences" (2000, p. 120). Although Carlson's broad suggestion is useful in establishing an aesthetic theory for the appreciation of nature, it doesn't help at all in overcoming the relevant-categories problem. I tried to show in the previous section that the relevant-categories problem arises because there is too much scientific knowledge available and there are too many accurate scientific descriptions to choose from. The above quote from Carlson helps to bring out the relevant-categories problem instead of relieving it.

Yuriko Saito (1998), a defender of the cognitive approach, offers a response to the relevant-categories problem that would, if it were correct, spell trouble for my discussion in the next chapter. She says that we can find the aesthetically relevant categories provided by the sciences by distinguishing between different branches of science:

> *some* scientific information does lead us away from the actual experience of nature. For example, the molecular structure of a rock… seems too removed from our immediate perceptual arena to be realizable on the sensuous surface. In general, these aesthetically irrelevant considerations belong to early modern sciences… (such as

> physics and chemistry)… On the other hand, some other scientific information enhances or modifies our initial perceptual experience of nature. Such information is derived from what Hargrove calls natural history sciences (such as geology and biology)… (p. 148).

It should be clear that if Saito is correct, then the issue of microscopic or unobservable entities that concerns those who debate about scientific realism is an aesthetic moot point. Facts deriving from physics and chemistry are simply too far "removed from our immediate perceptual arena" to play any role in aesthetic evaluation, and if we focused on such facts they might even distract us from proper aesthetic appreciation.

But have we a good basis for thinking that facts deriving from physics and chemistry are really aesthetically unimportant? Another cognitivist, Glenn Parsons (2002), points out that Saito's response to the relevant-categories problem relies on "too-familiar generalizations" about science that "engender skepticism" (p. 285). The insinuation here is that these generalizations about science have been shown to be misleading or unhelpful; unfortunately Parsons does not elaborate. At least it is unclear that the sciences can be neatly divided along the lines that Saito suggests. While this lack of clarity may not by itself be a good reason to dismiss Saito's view, we should at least demand that she provide a stronger justification for drawing the line between aesthetically relevant and aesthetically irrelevant sciences where she does. She says that certain facts about natural objects are "embodied or manifested in the observable features of the object…" (Saito, 1998, p. 148). But isn't there a sense in which the molecular structure of a natural object is more clearly "embodied" or "manifested" in it than is its geological history? After all, albeit with the aid of instruments, one can at least 'see' a rock's molecular structure in a way that one could never 'see' its geological history. At the very least we would need a more rigorous account of embodiment and manifestation from Saito, as well as a precise description of what count as "observable features" of natural objects.[14] Until such an account is offered, I think we do best to view Saito's distinction between different kinds of science with suspicion. It is unclear that this distinction can be theoretically maintained, and it is unclear that facts derived from chemistry and physics really are mostly aesthetically irrelevant.

As an example of a case in which knowledge from early modern sciences makes a difference, Parsons (2002) suggests that: "a switch between the categories of 'three dimensional carbon lattice' and 'vertical stack of two-dimensional carbon planes', for instance, can make an aesthetic difference to the… profile of an observer viewing a mineral" (p. 285). In ordinary parlance, 'three dimensional carbon lattice' corresponds to 'diamond', while 'vertical stack of two-dimensional carbon planes' corresponds to 'graphite'. But Parsons has in mind here a scientifically savvy observer who does not employ the ordinary concepts; instead this observer thinks in terms of the molecular categories mentioned, seeing the mineral as an instance of one of the molecular categories.[15] For this observer, then, knowledge derived from the early modern sciences makes an aesthetic difference. If Parsons is correct, then we can disregard Saito's blanket distinction between branches of science.

The response Patricia Matthews offers to the relevant-categories problem requires taking a closer look at the way Walton's categories of art operate. There is all manner of empirical knowledge about works of art available to us, but the only sort that is relevant to our aesthetic appreciation is empirical knowledge that affects the categories we employ, and these categories are only relevant if they "directly affect how we perceive the work" (Matthews, 2002, p. 41).[16] On this view, we do not pay attention to the weights of canvasses used in paintings because knowledge about the weights of paintings simply does not affect how we perceive works of art. (Imagine: "Oh, that's a *two* kilo painting… now I see.") Knowledge about the historical context in which a painting was created, though, can and often does affect how we perceive the painting. (Imagine: "Oh, that's an *impressionist* painting… now I see.") Although it is a bit unclear what Matthews means by knowledge "directly" affecting our perceptions of works, the general line of her response is evident: In nature, as in art, non-perceptual facts are aesthetically relevant if they really affect the categories we employ and the way we perceive natural objects. Here Matthews introduces the term 'perceptual norms', saying these "indicate which features are standard, contrastandard, and variable" (p. 40), in Walton's sense, for an object relative to a category. Employing this term, Matthews says that "under ordinary perceptual circumstances, the chemical composition of the tree bark will not contribute to perceptual norms and therefore is not relevant" (p. 40).

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[14] Perhaps she has in mind something like van Fraassen's view of unobservables? See Chapter 2.

[15] Parsons confirms in personal correspondence that this is what he has in mind. The molecular categories will certainly not be decisive for everyone, but they will be for certain observers. This might show that knowledge of unobservables will not alter most peoples' aesthetic experiences, but if this knowledge can affect anyone's aesthetic experiences then I believe my discussion in Chapter 2 is worth having.

This last claim challenges my view that the scientific realism debate is pertinent to a discussion about scientific cognitivism. Clearly, Matthews would contend that knowledge about microscopic or unobservable entities, like knowledge about chemical composition, would not usually contribute to perceptual norms and so would not usually be aesthetically relevant. But what lurks behind the phrase "under ordinary perceptual circumstances"? It is tempting to say that if there are *any* circumstances under which knowledge about unobservables would affect our aesthetic appreciation, then my discussion about the scientific realism debate and scientific cognitivism (Chapter 2) is worth having. Perhaps the only way to determine whether there are such circumstances is by an empirical investigation into different instances of aesthetic appreciation. Parsons' comment (above) about switching between the categories of different structural views about carbon may be pertinent here. Or consider the aesthetic difference that might result if we adopted a superstring theory about elementary particles as opposed to the standard particle theory. While "the standard model views the elementary constituents of the universe as pointlike ingredients with no internal structure," superstring theory views the particles we see in particle accelerators as excitation modes of more elementary, invisible strings "whose vibrational patterns orchestrate the evolution of the cosmos" (Greene, 1999, p. 135).[17] If we perceive macroscopic objects as composed of these vibrant, dynamic strings that seemingly embody musical metaphors, we may come to appreciate them differently than we would if we perceive the same objects as composed of more standard gauge bosons, quarks, and leptons. This is speculation on my part, for I am unable to consistently perceive macroscopic objects as composed in either of these two ways. But perhaps a perceptual and aesthetic difference might arise here for scientists who work in theoretical physics.[18]

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[16] In fact, Matthews denies that the analogy between art appreciation and nature appreciation breaks down at all, for on her view it is not an artist's intentions or a society's judgment that makes an art category aesthetically relevant. Instead, categories in both art and nature are aesthetically relevant just if they make a difference on what Walton calls the psychological level.

More generally, we may say of Matthews' position that it makes the aesthetic relevance of scientific knowledge dependent on the psychological profile of individual appreciators. So, depending on what appreciators choose to focus on, what background knowledge they possess, or how they get their aesthetic kicks, it may very well be the case that unobservable entities play an aesthetically relevant role in Matthews' account. Unlike Saito's response to the relevant-categories problem, Matthews' response does not in principle rule out the possibility of the importance of the scientific realism debate to scientific cognitivism.

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[17] For more on string theory, see (Greene, 1999), especially pp. 135-165. It's interesting that Greene uses lots of aesthetically-loaded speech in explaining what strings are supposed to be, appealing especially and explicitly to analogies with music. For example, he entitles a chapter "The Cosmic Symphony" and states that "With the discovery of superstring theory, musical metaphors take on a startling reality" (p. 135).

[18] According to Parsons (2006, pp. 176-178), "scientists do often succeed in 'seeing' theoretical facts and entities" in ways that laypeople do not, even when it comes to looking at macroscopic objects in order to determine what's going on at the molecular level.

Glenn Parsons himself offers a different sort of response to the relevant-categories problem by resurrecting one of Walton's original "circumstances [that] count toward its being correct to perceive a work… in a given category." (Walton, 1970, p. 69). This is Walton's second circumstance, what Parsons calls the "beauty-making criterion" (Parsons, 2002, pp. 292-295). It is (probably) correct to view a work in a certain category if the work is "better, or more interesting or pleasing aesthetically, or more worth experiencing when perceived in" (Walton, 1970, p. 69) the category. Carlson dismisses this Waltonian criterion, saying that whether viewing a work or object in a category yields a better aesthetic experience of it does not seem to be what makes a correct category, but only provides evidence that we have the right category.[19] Carlson seems to share Walton's worry that if beauty-making were the sole criterion we employed for determining correct categories, then for a given work we could dream up "some farfetched set of categories" to make the work "appear to be first-rate, a masterpiece" (Walton, 1970, p. 71). However, if these dreamed-up categories are totally unconceived of by the artist or the society in which the work was created, then Walton contends that they cannot be the correct categories for viewing the work. Perhaps Carlson's concern is that with respect to nature, since we cannot look to artists or an art-critical society to weed out the farfetched categories, employing the beauty-making criterion would be especially problematic.

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[19] See Carlson's footnote 21 in Chapter 5 ("Nature, Aesthetic Judgment, and Objectivity") of his (2000), pp. 70-71. He also suggests using the beauty-making criterion as, at most, a tie-breaking procedure if we must choose between two candidate categories to employ.

Despite this worry, if we suppose that the beauty-making criterion is one of the circumstances that makes a category the correct one for perceiving a natural object aesthetically, then we can see how this would help offer a response to the relevant-categories problem. We could look at all of the categories provided us by the natural sciences, and from those select the ones that will make the objects of our appreciation most aesthetically appealing. These categories are the aesthetically relevant ones. Now, to address Carlson's worry, note that on Parsons' account the beauty-making criterion does not dream up new (potentially ad hoc) categories. Instead, for Parsons, it helps us choose the correct categories for *aesthetic* appreciation from among the multitude of already-established, otherwise-correct scientific categories.

To bring Parsons' position into dialogue with my discussion about scientific realism, then, I must investigate whether choosing to use categories based on unobservables could enhance aesthetic appreciation. If Parsons is right, then any otherwise-correct scientific categories that enhance aesthetic appreciation would be the correct categories for viewing natural objects aesthetically. Is it plausible that knowing some scientific facts about the unobservables that comprise an observable object could make the macroscopic object appear more aesthetically appealing? I don't see anything that, in principle, would preclude this. Knowing that a natural object is very old might make it more aesthetically appealing, as this knowledge would increase our awareness of the object's longevity and against-the-odds survival. We might view the object in the category 'ancient object', and this would alter our aesthetic experience of it. In a similar way, knowing that an object is comprised of certain sorts of subatomic particles might make it more aesthetically appealing since this knowledge would increase our awareness of the incredible complexity of the object.[20]

**Conclusion**

In the last section of this chapter I have looked at various cognitivist responses to what I have called the relevant-categories problem in natural aesthetics, in an attempt to see whether any categories that might result from considerations in the scientific realism debate could be relevant to the way we aesthetically appreciate nature. If non-perceptual facts about unobservables simply cannot be among the facts that scientific cognitivism appeals to, then there would be no real reason to consider the issues I present in the following chapter. I have tried to show, first, that the relevant-categories problem should be a real concern for cognitivists. Quite apart from the scientific realism debate, cognitivists should be able to come up with some sort of response to the problem. Certain strategies for overcoming the relevant-categories problem, such as the one Saito proffers, would effectively dismiss the scientific realism discussion as irrelevant to natural aesthetics. But I have tried to show that we have good reasons for rejecting, or at least being suspicious of, Saito's solution. For other cognitivist solutions to the relevant-categories problem, such as the ones offered by Matthews and Parsons, however, there is reason to suspect that categories based on unobservables could, under certain circumstances and for certain appreciators, be aesthetically relevant. Our knowledge about unobservables may help us establish categories for viewing natural objects that change the 'perceptual norms' we employ or that make natural objects appear aesthetically better. If either of these is the case, then there is room to ask about whether science does, in fact, give us knowledge about unobservables; and if science does not give us knowledge about unobservables, does this affect our aesthetic appreciation of those objects under scientific cognitivism? To these issues I turn in the next chapter.

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[20] In a case like this, we wouldn't need to be concerned with making comparative evaluations between natural objects or even between artificial objects – everything might be composed of strings, for example, and so the complexity of everything might provide good reasons for aesthetically valuing everything.

# Chapter 2: Scientific Cognitivism and the Scientific Realism Debate

## Scientific Cognitivism and Truth

In this chapter I will describe two different positions in the scientific realism debate and consider how each interacts with scientific cognitivism. In the previous chapter I suggested that scientific cognitivism might need to be interpreted differently depending on the outcome of the scientific realism debate. If our knowledge or lack of knowledge about unobservable entities can be aesthetically relevant, then we must consider what it is that scientific theories tell us about our cognitive relationship to unobservable entities. Scientific realists argue that science tells us – or at least *aims* to tell us – the (approximate[21]) truth about the world, right up to the level of unobservable entities. More specifically, scientific realism can be described as the view that adheres to the following three claims:

> (SR1) The world that science attempts to describe has a natural-kind structure that exists independently of human minds.
> (SR2) The statements we make about the world in our scientific theories are all either true or false.
> (SR3) We are justified in believing that what our scientific theories tell us about the world is (at least approximately) true.[22]

The first statement is a basic realist metaphysical claim about the nature of the world. The second statement is a semantic claim about the scientific language we use. Scientific propositions, including ones that make reference to theoretical or unobservable entities, are truth-conditioned. In other words, they are meant to be interpreted as propositions about the world. The third statement is an epistemic claim about how well we can know the true nature of the world.[23]

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[21] Though I mention it for the sake of accuracy, it is not my purpose to elaborate on the notion of approximate truth. Because successful scientific theories are sometimes amended in a process of historical development, realists must argue that these theories are only *approximately* true. How this notion of approximate truth gets spelled out can be quite important. For more on approximate truth, see (Psillos, 1999, pp. 276-279), and for a critique see (Laudan, 1981, pp. 29-32).

[22] The standard scientific realist argument to back up this third claim is often called the 'no-miracles argument.' The reasons behind the debate between realists and non-realists are tangential to my project here, but further information can be found in (Psillos, 1999, ch. 4) and (Putnam, 1975, p. 73).

From this brief sketch I think we can already begin to see how nicely the scientific realist position and scientific cognitivism can work together. Recall the three commitments of scientific cognitivism introduced in the first chapter. If we put a scientific realist twist on them in order to emphasize the important role truth plays for the realist, we might re-word them in this way:

> (CR1) To properly appreciate an object X, we must perceive X as what it *truly* is.
> (CR2) To perceive X as what it *truly* is, we must perceive X under its *true* category or categories.
> (CR3) The natural sciences tell us what the *true* categories are for natural objects.

On this reading, truth figures prominently in two places. In the first two claims we are concerned with knowing the true nature of the natural object. In the last two claims we are concerned with science giving us the (truly) correct categories under which to view the natural object. Whether scientific cognitivism is limited to this realist interpretation of its claims is essentially the subject of this chapter. But as these claims now stand, it seems clear that the cognitivist-realist would be content with them. If science really does tell us about the true nature of an object and if science really does tell us the correct categories under which to view the object, then we are as well off as we could hope to be.

In order to see the scientific realist version of scientific cognitivism in action, let us elaborate on an example introduced by Carlson (2002, p. 89). As you are walking along the beach one day, you see a whale rise partially above the surface of the water.

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[23] I take this characterization from (Psillos, 1999, p. xix).

Knowing very little about marine biology, you assume that you have just seen a large fish, and you accordingly make a number of judgments about the fish: It is a big, blue marine animal. You also make an aesthetic judgment about the supposed fish: 'The animal is clumsy (for a fish)!' Happily, a local also saw the whale surface, and tells you that what you saw was not a fish at all, but a whale. The local also tells you some relevant natural-history information about whales, including some information about their evolutionary development and the fact that they are intelligent mammals who live in the sea. Assume you take this lesson to heart, and then see the whale again on a later occasion. Now you know some correct scientific categories (e.g. 'mammal') under which to perceive the whale, you know more about what the whale truly is, and your previous aesthetic judgment will be revised: 'The whale is magnificent and graceful (for a marine mammal)!' Your aesthetic appreciation is changed and deepened by your new scientific knowledge about the whale and the categories to which it belongs.[24]

On the scientific realist account, the scientific theories that describe whales tell us the truth about whales. Thus the whale you saw really does belong to the categories you were taught; having been taught, you really were thereafter able to perceive the whale for what it truly is.[25] If science works like this by giving us correct categories and true descriptions, then scientific cognitivism will give us exactly the sort of objective, confidence-inspiring account we need for the aesthetic appreciation of nature. Science identifies the categories that really exist in nature, and so it informs us about what natural objects really are. We can then appropriately use this scientific knowledge in making aesthetic judgments.

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[24] It may be useful here to recall Eaton's suggestion from the first chapter: The knowledge you obtained about the whale will enhance your aesthetic appreciation of it, which will draw your attention to other aspects of the whale, and this in turn will expand your knowledge – and so on in a cycle of sustained aesthetic attention. See (Eaton, 1998, p. 89).

[25] Of course, your knowledge about the whale is still not exhaustive. But your appreciation is more proper than before because now you know some correct categories for the whale, know more about what the whale really is, and no longer believe certain falsehoods about the whale.

Note how the cognitivist-realist view retains all the merits of scientific cognitivism and of the cognitive approach introduced in chapter 1. Because our aesthetic appreciation is informed by the truth about its objects, we can be (1) confident in making (2) objective judgments about natural objects as they really are. Moreover, (3) we retain the analogy with art appreciation: appropriate knowledge informs and heightens aesthetic appreciation of natural objects just as it does with works of art. 'Mammal' is to the natural object as 'painting' is to a work of art; knowledge of these categories deters us from making mistaken aesthetic judgments. Further, (4) when science tells us what natural objects truly are, this involves providing information about their places in natural environments. A natural object such as a whale is truly an integral part of an environment, both in the present and in the future.[26] Thus, knowledge about natural objects feeds into ecological concerns to preserve natural environments. (5) When we learn the truth about natural objects, our attention is redirected to certain features of the objects (e.g. mammalian characteristics), which heightens our aesthetic experience and brings out further features for us to learn about. In this way, our attention is sustained. Finally, (6) the natural sciences have directed our attention to appropriate categories for appreciating the natural object.[27]

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[26] In much of Carlson's work, the fact that in nature we appreciate environments and objects-in-environments (rather than self-contained, free-standing objects, as in art) is stressed. See his description of a "Natural Environmental Model" for aesthetic appreciation in his (1998, pp. 127-129) for more. Throughout these first two chapters I emphasize the appreciation of natural objects and not (so much) environments only because it is easier to see that unobservable entities may play a role in our knowledge of natural objects than it would be to see this in the case of environments.

[27] Of course, this depends on having overcome what I called the 'relevant-categories problem' in the Chapter 1.

The main point I wish to emphasize with this example is that if we view science as giving us truth about natural objects, we get a very strong sense that we are living up to the cognitive approach's mandate to appreciate natural objects as what they really are. This allows scientific cognitivism to retain all the desired merits I have discussed. So, scientific realism and scientific cognitivism mesh quite well with each other. It now remains to be seen whether scientific cognitivism is as strong when coupled with a different view about science.

## The Constructive Empiricist Challenge

On the current philosophy of science scene, the chief anti-realist rival to scientific realism is Bas van Fraassen's *constructive empiricism*.[28] Unlike scientific realists, constructive empiricists are agnostic with respect to the existence of unobservable entities. Van Fraassen acknowledges that unobservable terms play a crucial, irreducible role in our high-level scientific theories.[29] He also acknowledges that statements referring to unobservables are truth-conditioned, i.e. capable of being either true or false about the world (see SR2, above). Furthermore, since we cannot practice science without referring to unobservables, we must "accept" theories which refer to unobservables. Despite all this, on van Fraassen's view we may still remain agnostic about whether unobservables exist in reality.

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[28] Anti-realists, including van Fraassen, are often motivated to their position by one of two arguments – the so-called 'pessimistic induction' from the history of science or the underdetermination of theories by evidence. For more information on the anti-realist motives behind the scientific realism debate, see (Laudan, 1981) on the pessimistic induction, and (van Fraassen, 1980) on underdetermination.

[29] In other words, van Fraassen does not make the same sorts of mistakes that many instrumentalists made in the early 20th century. The standard instrumentalist view was that all talk about unobservables was reducible to talk about observables, and so we could do away with theoretical terms altogether. This sort of position has proven untenable. See (Psillos, 1999, pp. 3-16) for a nice discussion.

It will be useful to look more closely at how van Fraassen (1980) distinguishes his constructive empiricist position from scientific realism. He characterizes scientific realism as adhering to two claims, namely: "*Science aims to give us, in its theories, a literally true story of what the world is like; and acceptance of a scientific theory involves the belief that it is true*" (p. 8).[30] Constructive empiricism denies both of these realist claims. First, it sees the aim of science as attaining empirical adequacy – not truth. Second, it sees acceptance of a scientific theory as involving something less than the belief that it is true, namely the belief that it is empirically adequate. I will look briefly at each of these in turn.

First, for the constructive empiricist science merely aims at empirical adequacy, i.e. at giving an accurate description of what can be observed. As van Fraassen puts it, "empiricism requires theories only to give a true account of *what is observable*, counting further postulated structures as a means to that end... So from an empiricist point of view, to serve as the aims of science, the postulates need not be true, except in what they say about what is actual and empirically attestable" (p. 3). All that a scientific theory needs to do is 'save the phenomena', i.e. give us an account that makes sense of all the empirical data.[31] If it is not the goal of science to give us theories that are true all the way through, then in order to properly practice science we need not aim at truth about the phenomena or about unobservables. If we do aim at truth, we merely incur extra, unneeded ontological risks.

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[30] Note that this characterization of scientific realism differs somewhat from that given above. Van Fraassen's version is weaker than Psillos' in that the former does not require any particular belief about the adequacy of our current, mature scientific theories, but only a belief about the aim of those theories. I am not concerned here to arbitrate between these different characterizations.

[31] Again, it is not my intention here to elaborate on the notion of empirical adequacy. A slightly more exact statement from van Fraassen (1980) may help to make this notion clearer to those accustomed to a semantic approach to scientific theories: "A little more precisely: such a theory has at least one model that all the actual phenomena fit inside. I must emphasize that this refers to *all* the phenomena; these are not exhausted by those actually observed, nor even by those observed at some time, whether past, present, or future" (p. 12). For Psillos' characterization of empirical adequacy see (Psillos, 1999, pp. 180-181).

Second, on the constructive empiricist view we can accept theories without believing they are true through and through. Accepting a theory does involve belief, but only a belief that the theory is empirically adequate – and therefore it involves less belief than a scientific realist's acceptance of a theory. Accepting a theory for a constructive empiricist also involves a commitment to "confront any future phenomena by means of the conceptual resources of this theory" (p. 12). In other words, if we accept a theory we believe that it is empirically adequate (or 'saves' all the present and future observable phenomena) and we commit to using the vocabulary and conceptual resources of the theory in the pursuit of our scientific research programs. Again, believing in more than the theory's empirical adequacy involves taking on extra, unnecessary risks; we can practice science fully without believing that unobservables exist in reality.

To further fill out this picture of constructive empiricism, we must also look at what sorts of things van Fraassen considers to be 'unobservable'. Note first that 'unobservable' is not synonymous with 'unobserved'. The first predicate concerns principle, where the second concerns only practice. Van Fraassen admits that 'unobservable' is a vague predicate, but he does not think its vagueness makes it unhelpful for us. He insists that almost all the predicates we use are vague, but argues that this vagueness is not problematic so long as we have clear cases and clear counter-cases for the predicate. A clear case for 'observable' is perception with the naked eye. A clear counter-case, says van Fraassen, is a micro-particle in a cloud chamber:

> The theory says that if a charged particle traverses a chamber filled with saturated vapour, some atoms in the neighbourhood of its path are ionized. If this vapour is decompressed, and hence becomes supersaturated, it condenses in droplets on the ions, thus marking the path of the particle. The resulting silver-grey line is similar (physically as well as in appearance) to the vapour trail left in the sky when a jet passes. Suppose I point to such a trail and say: 'Look, there is a jet!; might you not say: 'I see the vapour trail, but where is the jet?' Then I would answer: 'Look just a bit ahead of the trail… there! Do you see it?' Now, in the case of the cloud chamber this response is not possible. So while the particle is detected by means of the cloud chamber, and the detection is based on observation, it is clearly not a case of the particle's being observed (p. 17).

In principle, then, the micro-particle is unobservable. What van Fraassen has in mind here is that 'unobservable' includes just those things that are in principle undetectable by the unaided senses. Thus distant planets, though unobserved, are observable since we could see them without the aid of instruments if we were closer to them. But microscopic entities, though perhaps observable with the aid of instruments, count as unobservable. By drawing the line between observables and unobservables where he does, van Fraassen can lead us towards some counterintuitive conclusions. Why does van Fraassen make this distinction as he does? Basically, he uses 'observable' and 'unobservable' as predicates relative to human beings with the perceptual capacities that human beings have.[32] In doing so, he acknowledges that if the human organism were to change – if, for example, the human eye evolved so as to be able to see quarks – then the limits of the observable / unobservable distinction would also shift. With this distinction in mind, we can recall that for the constructive empiricist science aims for truth only about observable phenomena. Questions concerning the existence and true nature of the microscopic entities that, we usually assume, are the building-blocks of our observable world, are excluded from van Fraassen's picture of science.

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[32] Van Fraassen compares this to the reasonableness of calling the Empire State building 'non-portable', even though we could conceive of a large sort of creature for whom the Empire State building could be easily moved (p. 17).

In summary, van Fraassen's view of science maintains first and foremost that the aim of science is not truth, but only empirical adequacy. A scientific theory need not tell us the truth about the world, but it does need to 'save the phenomena' by giving us a story to account for all the observable data. Accordingly, in accepting a scientific theory the constructive empiricist does not adopt the belief that the theory tells the truth, but only the belief that the theory is empirically adequate. We risk much but gain nothing whatsoever in the practice of science, says van Fraassen, by aiming beyond empirical adequacy to truth about unobservables. And so we are quite justified in remaining agnostic about the unobservable entities described in our scientific theories.

### Constructive Empiricism and Scientific Cognitivism: The Problem

Now that we have taken a look at van Fraassen's view of science, it is time to see why being a constructive empiricist might be problematic for a scientific cognitivist in aesthetics. I offer the following as a way that a cognitivist-agnostic could interpret the three key claims (introduced in chapter 1) of scientific cognitivism:

> (CA1) To properly appreciate an object X, we must perceive X as what it really is.
> (CA2) To perceive X as what it really is, we must perceive X under the correct category or categories.
> (CA3) The natural sciences, *insofar as they tell us about observable entities*, tell us what the correct categories are for natural objects.[33]

The first two claims don't look as if they need any changes from the original version, but the third claim should be revised to reflect the agnostic's double-standard for scientific categories. The natural sciences cannot be said to give us the correct categories for unobservable objects in the same way that they give us the correct (i.e. true) categories for observable objects. Two things seem to follow from this revision. First, we cannot know what unobservable entities really are (CA2), and so we cannot properly aesthetically appreciate unobservable entities themselves (CA1). Second, since our high-level scientific theories all invoke unobservables at some point, none of this information about unobservables can go into our determination of the correct categories for a would-be object of appreciation. Thus, no unobservable entities that comprise a given natural object could be aesthetically relevant in the appreciation of the object. Both of these consequences are troublesome.

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[33] To (CA3) we might add: 'And where the natural sciences speak of unobservables entities, we may remain agnostic about those entities and any categories derived from them.'

Though initially appealing, the first consequence – that no unobservable entity can itself be an object of proper aesthetic appreciation – can be challenged. This is because, as already mentioned, van Fraassen considers any entity unobservable just so long as we could not perceive it with our unaided senses. But does it not seem that we could see some natural object – say, a fairly large molecule – with the aid of an instrument and properly find it beautiful in and of itself? Moreover, doesn't it seem that the natural sciences could tell us the correct (i.e. true) categories for viewing the molecule? If so, then we have an example of an object van Fraassen would consider unobservable, and yet we manage to have a proper aesthetic appreciation of it under correct categories. Thus it seems an unobservable entity itself should be able to become an object of aesthetic appreciation.

This challenge hinges on where van Fraassen draws the line between observable and unobservable entities. Since he categorically excludes the microscopic from the realm of the observable, he opens himself up to criticisms of this sort that prey on counterintuitive conclusions derived from constructive empiricism. This really is not an objection to scientific cognitivism, then, but an objection to van Fraassen's sort of agnosticism in general. Do we really want to hold that our scientific theories do not tell us the truth about microscopic entities, even if we can see those entities with the aid of instruments?[34] As disconcerting as this may seem, if van Fraassen is willing to live with this sort of consequence in science, I think he should have no additional qualms about it infecting his aesthetics as well.

Challenging the second consequence – that no unobservable entity can be aesthetically relevant in our appreciation of any observable object – will prove more interesting. Recall that a major component of the cognitive approach is the claim that our aesthetic appreciation relies (in part) on facts about observable natural objects that are not perceived in the objects. But now what of facts about the observable objects that are not even *perceivable*? In the first chapter I tried to suggest that non-perceptual facts about unobservables might be relevant to the categories we employ when perceiving natural objects.

Van Fraassen admits that there must be such non-perceptual facts about the unobservable entities that comprise observable natural objects. Our high-level theories cannot avoid reference to unobservables, and statements containing these references are truth-conditioned. Now, if unperceived facts about observable objects can be aesthetically relevant (as the cognitivist claims), and if there are facts about observable natural objects that we can't perceive (as the constructive empiricist admits), then it follows that these unperceivable facts at least could be aesthetically relevant – the suggestion I developed in the previous chapter. The danger for the constructive empiricist, roughly, is that she may limit her ability to aesthetically appreciate if she dismisses facts about unobservables. Since she cannot know whether what our theories say about these putative facts is true, the constructive empiricist must not treat these facts in the same way that she treats facts about observables. Her agnosticism may prevent her from acknowledging certain non-perceptual facts and therefore may prevent her from taking them as aesthetically relevant in helping her determine categories for perceiving objects. Thus her agnosticism might impoverish her aesthetic experience.

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[34] There are some microscopic entities, like fairly large molecules, that we can 'see' more clearly than others with the aid of instruments. A simple magnifying glass might be enough to give us a glimpse of the molecule. At the other end of the spectrum are entities, like atoms, so small that we must use an electron microscope to 'see' them. With these entities, we can be said to 'see' them only in a very attenuated sense of that verb since the electron microscope creates a processed image of the entities on a photographic plate. It is with respect to the larger entities on this spectrum of unobservables that van Fraassen's position seems to lead us most strongly to the counterintuitive conclusion I discuss. For more on what we actually see with microscopes, see Ian Hacking's classic (1981).

In order to make this danger clearer I offer the following schematic example. Suppose there are two scientists – one a realist and the other a constructive empiricist. Both scientists accept theory T, a part of mature science, which describes a natural object X. T saves all the observable phenomena about X better than any other known theory, and states that X belongs in the category 'igneous rock.' Up to this point the scientific realist and the constructive empiricist could be in complete agreement: T tells us the truth about a category X belongs to – that a rock is igneous is an observable fact.[35] Seeing X under the category 'igneous rock' affects how the scientists perceive X, and causes them to make certain aesthetic judgments about the rock. But T also proposes that, unlike other igneous rocks, X is made up of trillions of complex, active, string-like subatomic particles that are unobservable with the naked eye. Thus, according to T, X also belongs in a (hitherto unrecognized) category 'C'. At this point the scientific realist and the constructive empiricist part ways. The scientific realist believes that T truly identifies the unobservable substructure of X, and so X really does belong in category 'C', just as it belongs in the category 'igneous'. Perceiving X as a 'C' will cause (let us say) the scientific realist to revise his aesthetic judgments about X, and he will now find X to be 'intricate', 'complex', and 'dynamic.' These aesthetic judgments are not open to the constructive empiricist in quite the same way. Even though she accepts T since it is the best available theory for saving the phenomena about X, she remains agnostic about the truth of what T postulates about unobservables, and so must also remain agnostic about whether X really belongs to 'C'.

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[35] Igneous rocks are defined by their history – they are just rocks formed when magma cools. This process is, in principle, observable, and so both scientists would agree that being igneous is an observable property and is a correct (true) category for X.

The constructive empiricist might initially respond by noting that in accepting T she also accepts that X belongs to 'C' since, presumably, including 'C' as part of theory T leads to some further predictive consequences in the observable world. Thus, she might say, she can also effectively see X as a 'C' insofar as this is required to practice science. But this raises a serious psychological concern when it comes to our aesthetic appreciation of X. Does the constructive empiricist "see X as a 'C'" in the same way that the scientific realist does? I contend that since the scientific realist can claim that X really is a 'C', he is in a much better position to "see X as a 'C'" in a way that satisfies Walton's psychological thesis. The constructive empiricist remains agnostic about whether X really is a 'C' and so her version of "seeing X as a 'C'" is not adequate to satisfy Walton's psychological thesis. The constructive empiricist cannot – except perhaps by exercising her imagination – perceive X as really belonging to 'C' and as having the aesthetic properties attributed it by the realist. And if she only imagines that X belongs to 'C', then she will be aware all the while that she is operating with a hypothetical. *If I could be confident that there really were subatomic strings*, she might say, *then my appreciation of X would be different in such-and-such a way because I would view it as falling under 'C'.* Despite possibly being able to recognize this, the agnostic would still not in fact view the natural object as belonging to the category 'C'. In this respect she would be like an art-appreciator who looks at a painting and recognizes that if she were to appreciate it as a sculpture, it would then seem to have different aesthetic properties. But she could not, in this case, commit to making aesthetic judgments about the work based on imagining it as a sculpture, since she would not believe that it really belonged to that category.[36] The same should hold for a constructive empiricist who tries to appreciate a natural object without being confident about the category to which it truly belongs. Especially if we contrast the status of her beliefs with respect to X belonging to 'igneous' and X belonging to 'C', we can see the difference that believing she has the correct category for an object can make. This means that the agnostic's views about the truth of what our scientific theories tell us about unobservables can be extremely important to her aesthetics. If the scientific realist is correct in saying that X belongs to 'C', then the constructive empiricist misses out on some aesthetic judgments about X. Of course, if the scientific realist is wrong about the unobservables that comprise X, then the constructive empiricist is justified in having remained agnostic about 'C'.

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[36] In this example she might, *qua* art critic, commit to judging the work as a sculpture, if this was what it took to be an art critic in her society. Similarly, she might, *qua* scientist, commit to judging the X as a 'C' if this was what her professional duties demanded. But I take it that our personal aesthetic judgments are private and not enslaved to the demands of our professional roles. Thus we should make our aesthetic judgments about X based on the categories we really believe X belongs to.

## Constructive Empiricism and Scientific Cognitivism: Initial Responses

In the foregoing example, we saw that the way we view the status of what our theories say about the unobservable entities that compose natural objects is aesthetically relevant to the appreciation of those objects. Of course, the example made use of variables to stand for a natural object, a scientific category, and a theory; it remains to be seen in practice if unobservable entities would ever affect our aesthetic judgments in any significant way. Thus, an initial sort of response a constructive empiricist might try to offer is to say that any such entities would likely not be aesthetically relevant, or would at any rate not have a large impact on our aesthetic judgments. How much does it really affect my *aesthetic* judgment of a rock if I know it to be composed of trillions of sub-particles? It changes the category I see the rock under, but it hardly changes how I perceive it in any significant way. Its sub-particle structure is not what makes the rock beautiful. In a similar vein, and as we have seen in the previous chapter, Patricia Matthews (2002) says that "under ordinary perceptual circumstances, the chemical composition of the tree bark will not contribute to perceptual norms and therefore is not relevant." (p. 40) The insinuation here is that microscopic, unobservable entities that make up the macroscopic objects of our appreciation seem to generally not affect the way we perceive the macroscopic objects.

While this may be true of "ordinary perceptual circumstances", if there are *any* occasions on which unobservables have any impact at all on the categories we employ and on our aesthetic appreciation, then the constructive empiricist will have less capacity for appreciation on these occasions than the scientific realist. In such unordinary circumstances, the constructive empiricist's natural aesthetics are impoverished compared to the realist's. In the previous chapter I defended the idea that knowing about the unobservable entities that make up a certain natural object could, at least sometimes, be aesthetically relevant.[37] The unobservable substructure of natural objects helps provide an explanation for all of their observable properties. If, on the agnostic account, this information cannot go into our determination of the correct categories for viewing objects, then potentially a vast amount of aesthetically relevant information is cast aside as unknowable. What this means, if I am right, is that the constructive empiricist simply does not have the same range or depth of possible aesthetic experience as the realist does.

The constructive empiricist might be somewhat immune to this sort of argument. Recall that agnostics like van Fraassen do 'accept' theories that make reference to unobservable entities in their practice of science. As previously mentioned, this just means that they make use of the theory that refers to unobservables in their work, but withhold from believing the theory is true. Still, the agnostic has committed to using unobservables in scientific practice, so why not use them in a similar way in aesthetics? The counterargument might go something like this: We cannot do science without referring to unobservables. Therefore, we will commit to using theories that refer to unobservables, though we need not accept that they exist in reality. Similarly in aesthetics, we cannot do natural aesthetics as fully as we'd like (along the lines of scientific cognitivism) without referring to unobservables. Therefore, without committing ourselves to their existence in reality, we will use them to develop our aesthetic judgments. This response resembles the comeback offered by the constructive empiricist in the schematic example above.

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[37] The carbon lattice example discussed by Parsons (and mentioned in Chapter 1) may provide a real-life example, as may adopting the superstring theory about fundamental entities.

If this is the response that the constructive empiricist offers, then two replies are in order. First, we can recall what has already been noted: The constructive empiricist has a double-standard for identifying objects and placing them under categories, according to whether they are observable or unobservable. Because of this double-standard, the constructive empiricist must at least admit that her way of aesthetically appreciating natural objects differs from the realist's way where categories derived from unobservables are concerned. The difference seems to lie in the fact that (where unobservables are concerned) the constructive empiricist still wants the same aesthetic appreciation the realist has, but does not attempt to wholeheartedly perceive the object 'for what it really is' since she remains agnostic about what it really is, on the microscopic level. This runs counter to the central cognitivist claim (C1) that to properly aesthetically appreciate an object we must perceive it as what it really is.

Second, and on a related note, we can see that the agnostic's confidence in her aesthetic judgments, insofar as they are based on unobservables, will be less than her confidence in aesthetic judgments based on observables. The latter depend on the truth about the world while the former only depend on the use of categories that are empirically adequate for doing science. Recall the example in which the constructive empiricist and the scientific realist agree about the degree of confidence they should have in employing the category 'igneous', but must disagree about the category 'C'. Insofar as unobservable facts about a natural object are aesthetically relevant, the realist will be more confident in making aesthetic judgments about the object than the agnostic. In other words, if the agnostic tries to offer the above response, then where unobservables are concerned the constructive empiricist loses one of the chief merits of the cognitive approach – confidence – as described in the first chapter.

### The Take-Your-Lumps Strategy

Ultimately, I think these considerations need not bother the constructive empiricist too much if she simply takes her lumps by accepting the aforementioned consequences. To the first concern, the constructive empiricist may reply that she is willing to forego potentially proper aesthetic appreciation where categories derived from purported knowledge about unobservables are concerned. After all, she is a constructive empiricist simply because she believes she has good reasons for remaining agnostic about such things. The desire to make the extra aesthetic judgments the scientific realist can make about natural objects is probably not enough to override those reasons.[38] In fact, the desire to avoid making inappropriate aesthetic judgments based on bad scientific theories may give her even more cause to remain a constructive empiricist! By wholeheartedly believing what scientific theories say about unobservables, the scientific realist risks aesthetically abusing the objects of his appreciation, since he may be basing his aesthetic judgments on false information. To the second concern, the constructive empiricist may note that the reduced confidence she can have in judgments is not confined to her aesthetic appreciation. This is the same sort of reduced confidence she lives with in science every day! If she has already adopted an agnostic position, she must not be greatly perturbed by the aforementioned double-standard or her reduced confidence in judgments where unobservables are involved. So, as long as scientific cognitivism still does the job she wants it to do for aesthetic appreciation in cases where unobservables are not involved, there should be no further barrier to her using it. The constructive empiricist's difficulties in employing scientific cognitivism are no different in kind than the difficulties she willingly confronts in doing science. So, she may be content to accept that her aesthetic appreciation is limited compared to the realist's; her ontological risks are also more limited.

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[38] Recall that she can still employ scientific cognitivism by using scientific knowledge to inform her ordinary aesthetic judgments – just not where unobservables are concerned. So, she can still have deep aesthetic appreciation, just (arguably) not as deep as the realist can.

### The No-Truth Strategy

An anti-realist might employ another strategy that rests on the claim that getting the right categories for aesthetic appreciation need not involve truth at all. Since van Fraassen does accept semantic realism – the claim that the statements in our scientific theories are capable of being either true or false – this strategy should probably not be associated with constructive empiricism.[39] But another sort of anti-realist might grant that there is a distinction between what we should believe about observables and what we should believe about unobservables, while maintaining that this has no bearing on the process of establishing which categories are correct for appreciating an object. Getting the correct categories is not a matter of getting the truth about them at all, either for observables or unobservables. This objection amounts to saying that (CA3), above, is not a claim that the anti-realist must be committed to. We get correct categories in the same way for both observables and unobservables.

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[39] Since van Fraassen's anti-realist position is often seen as the only anti-realist game left in town, the fact that the constructive empiricist would probably not adopt the 'no-truth' strategy might mean that in practice no one concerned with the scientific realism debate would actually employ this strategy. This certainly counts against the 'no-truth' view in this context, but I think it is still instructive to investigate what the cognitive approach might look like when reinterpreted according to this strategy. Partly, this is because the radical anti-realists we will study in the next chapter might employ this strategy in a different context.

Using this strategy, scientific cognitivism might be re-envisioned in something like the following way: One of the primary motivations behind the development of scientific cognitivism was to find something like what we have in the art world – standards for viewing works that we can mostly agree on and by which we can assess would-be objects of appreciation. Knowing that a work of art is a painting helps us to focus our appreciation on the right things in the work of art. So, for example, we will not pay attention to the flatness of a painting (since flatness is what Walton calls "standard" for paintings), but we will focus on the colors employed in the painting (since color is "variable" for paintings). The art world uses the category 'painting' and others like it, and these categories guide us in appreciating all sorts of works of art, telling us where to focus our attention. In nature, we also need categories that we can mostly agree on and use in our aesthetic judgments. These natural categories must fulfill similar roles, namely telling us which features of a natural object are standard, variable, and contra-standard for the object. So long as we have categories that we can agree on and that fill these roles, we will have the sort of aesthetic theory we need – regardless of whether these are *truly* the categories to be found in nature. What is more important is whether we can agree on them and whether these categories are useful tools to help us categorize natural objects. Because this sort of view bears some resemblance to old instrumentalist views of science, I will call this the cognitivist-instrumentalist position.[40] Perhaps the cognitivist-instrumentalist could re-word the central scientific cognitivist claims like this:

> (CI1) To properly aesthetically appreciate an object X, we must know what features are standard, variable, and contra-standard for X.

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[40] I refer especially to the instrumentalist views that science aims not at truth but at 'economy of thought,' and that it serves only as a tool to help us classify experimental laws. See (Duhem, 1906, esp. pp. 19-24).

> (CI2) To know what features are standard, variable, and contra-standard for X, we must perceive X under categories we can agree on.
> (CI3) The natural sciences recommend certain categories to us as the most useful and efficient ones for classifying natural objects.

On this interpretation, scientific cognitivism takes on a decidedly different feel. In the first claim, knowing what features are standard, variable, and contra-standard for natural objects need not involve knowing what the natural objects are really like. So long as there is general agreement that the categories we employ are useful for helping us determine how to evaluate the features of natural objects, we need not concern ourselves with truth whatsoever – even truth of the mere 'empirical adequacy' sort (i.e. the sort that holds with respect to observables). If we rid the cognitivist claims of the mien of truth, there should be no worry that scientific cognitivism works well only with scientific realism.

One concern with offering this 'no-truth' response is whether, having undergone so many changes, the remaining claims still represent scientific cognitivism or the cognitive approach. I think it must be admitted that in a strict sense, this reinterpretation leaves us with a view that is no longer the cognitive approach with which we began. A view that does not try to appreciate natural objects as what they really are and that does not say that knowledge about nature is of paramount importance cannot be called cognitivist in the sense I have been discussing.[41] Instead, what the no-truth strategy leaves us with is an aesthetic theory that is cognitivist only in a very weak sense. We might call this new view ***belief-cognitivism*** since it relies only on our beliefs about natural objects. That is, belief-cognitivism says that in order to have proper appreciation of natural objects we must have some beliefs – but not knowledge – about the categories to which the objects belong. To advocate belief-cognitivism is basically to say we should employ Walton's psychological thesis without his philosophical thesis. Belief-cognitivism is still weakly cognitivist, as we can see by contrasting it with theories in natural aesthetics that say that proper appreciation is possible without either beliefs or knowledge (e.g., just by being engaged with nature).[42] But there can be no doubt that employing the no-truth strategy leaves us with a considerably diluted version of the cognitive approach.

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[41] This idea is further developed in Chapter 3.

Indeed, most scientific cognitivists would probably not be comfortable with the no-truth reinterpretation of their position. To see why, consider the following: Suppose the world has, as scientific realists claim, a natural-kinds structure. In other words, suppose that there really are categories to which natural objects belong. Now, if in practicing science and in making our aesthetic judgments we do not aim to identify these true categories, but only to find categories that are useful for us, then we run certain risks. Specifically, we risk employing false categories both in science and in our aesthetic judgments. Even if we agree to use these categories, and so we come to some consensus about how to aesthetically appreciate natural objects, we could be terribly wrong about these categories. We would then be going directly against what the original formulation of the cognitive approach recommended: we would not be appreciating objects for what they really are and would instead be doing something akin to trying to appreciate a sculpture in the category 'paintings' or a whale in the category 'fish'. This is essentially what Walton (1970) feared with his "farfetched" categories (p. 71).

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[42] See (Carlson & Berleant, 2004, p. 17) for a brief description of Arnold Berleant's "aesthetics of engagement", an example of a view that says proper aesthetic appreciation of nature need involve no cognitive component.

The cognitivist-instrumentalist may respond to this concern as follows. We have no means other than by science to try to come to know nature 'on its own terms.' That is to say, if science doesn't aim for truth, our culture has no other institution in place to attempt the task of identifying the true categories of nature. If this is the case, then we must abandon truth in the cognitive approach. But if we leave truth out, couldn't we still make use of the basic structure of the cognitive approach? Couldn't we, perhaps, still turn to the natural sciences – where else would we turn, after all?[43] – to provide us with the categories we need in order to aesthetically appreciate nature? If science doesn't aim at truth, and we have no other way of getting at the truth about nature, then does it make any sense to worry that we might employ false categories? Maybe we can be content to find standard, variable, and contra-standard features of natural objects in the way described above.

If we follow this recipe, as I have already mentioned, we effectively abandon the robust version of scientific cognitivism I initially described. Still, we retain the basic structure of Walton's theory by holding on to the category-apparatus and the notions of standard, variable, and contra-standard features that Walton employs. Moreover, on this 'no-truth' strategy we still find a role for the natural sciences to play. Thus we are left with a sort of skeleton of scientific cognitivism. Can we still derive a useful aesthetic theory from this skeleton? Perhaps the way to answer this question is to see if this reinterpretation preserves the merits I mentioned in the first chapter. Let's look at these. (1) Although we might have more confidence in a scientific theory if we believed it told us the truth about the structure of the world, we can still remain confident in our aesthetic judgments even if we do not think they are based on some deep truths about the world.

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[43] Some possible answers to this (here) rhetorical question can be found in Chapter 3.

We have only to consider the art case to see that this is so. We confidently apply art categories without suspecting that these are anything but useful categories that we have come up with. Works of art really do belong to certain categories, but only because we have decided that they belong to these categories.[44] (2) Objectivity is retained if the majority of a society agrees on the categories employed. Of course, we might find it easier to agree if we suppose that our categories mirror natural categories, but the art case again shows us that this need not be so. (3) It should be clear that the analogy with the aesthetics of art is maintained here – perhaps even more strongly – in some ways – on this interpretation than on the original formulation I offered for the cognitive approach. With truth out of the picture, we need not worry about finding the natural-kinds structure inherent in nature; instead we only consult our scientific society for its views about the most useful ways for us to categorize natural objects, much in the way that we would consult an art-critical society to find how it categorizes works of art. (4) It may be more difficult to align aesthetics with ecology if we take the view that science does not aim at truth. This is because now aesthetics and ecology cannot call upon the same base of facts provided by the sciences. Without this common base of facts, it is unclear whether landscape designers, etc. can as easily draw upon ecological considerations in their work. On the flip side, the science of ecology itself might look quite different if getting the truth about the natural world were not part of its mandate. Thus the harm here appears to occur more on the scientific side than on the aesthetics side. (5) Under this reinterpretation the potential for sustaining aesthetic attention should not be eliminated. Our use of categories, so long as they are appropriate and useful, should still draw our attention to new features of objects. One potential drawback here is that if we think of these as 'just human-created categories' we might be less prone to give them our sustained attention. But as we have seen, this problem does not hinder us in the case of categories of art. (6) Under this interpretation we certainly would still find useful categories for aesthetic appreciation. As I have defined the no-truth strategy, the natural sciences still give us the categories we require, just provided we have overcome the relevant-categories problem.

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[44] The issue here is quite complex. With art, unlike nature, we humans are the creators of the objects of appreciation as well as the creators of categories. On this interpretation of the cognitive approach, we need to retain the latter function even though we haven't the former. But in different cases in the art world, artists, and not just the societies the artists work in, have different degrees of influence upon the determination of the categories to be employed. It is unclear that we can easily be confident category-creators for nature without being nature-creators.

To conclude this section, I want to emphasize that in employing the 'no-truth' strategy, the anti-realist abandons a robust version of scientific cognitivism but holds on to the structural apparatus behind the cognitive approach. In so doing, the anti-realist does not seem to sacrifice many of the merits of scientific cognitivism or of the cognitive approach. Even granted that so long as we view science as getting at the true nature of nature we have a very strong case for endorsing scientific cognitivism, when we remove truth from the equation we nevertheless are left with an attractive aesthetic theory. Certainly, under this reinterpretation we still have the possibility of employing categories in Walton's fashion and of having a fruitful theory of natural aesthetics. Remember that the alternative to employing scientific cognitivism, for several centuries, was to avoid talking about the aesthetics of nature at all, for the discipline was seen as helplessly subjective. Under the no-truth reinterpretation, we certainly do not find ourselves in such dire straits.

## Conclusion

In the end, I think that scientific cognitivism can be retained under a constructive empiricist or anti-realist view of science. I have looked at two sorts of strategies for meshing an anti-realist view of science with scientific cognitivism: 1) the 'take-your-lumps' strategy, and 2) the 'no-truth' strategy. Under the take-your-lumps strategy, the constructive empiricist simply admits that where unobservable entities are concerned she cannot hope to have the same confidence in making aesthetic judgments as a scientific realist. However, she may say, two things are worth noting. First, unobservable entities are not often – if ever – concerned in our aesthetic judgments. It's a struggle to find examples in which some knowledge about unobservables clearly affects the categories under which we perceive a natural object, and perhaps this only ever happens for certain very scientifically savvy observers. Second, she has what she believes are good reasons for remaining agnostic about the existence of the unobservable entities described in our scientific theories. The cost of adopting constructive empiricism is a loss of confidence or lack of belief in the truth of theories where unobservables are concerned. If this lack of confidence infects her aesthetic judgments, then so be it; that is part of the cost of not making risky scientific realist ontological commitments. Moreover, by remaining agnostic about unobservables, she does not risk making mistaken aesthetic judgments based on categories derived from what our scientific theories say about unobservables.

Under the 'no-truth' strategy, the anti-realist tries to reinterpret scientific cognitivism to rid it of the air of truth. The focus shifts from knowing what natural objects really are to simply knowing useful categories that give us guidelines for evaluating natural objects. Although this change in focus radically alters scientific cognitivism, I have argued that the underlying structure of the cognitive approach and most of its merits are retained, albeit somewhat weakened, under this reinterpretation.

By employing either strategy, then, an anti-realist can make use of the basic apparatus of scientific cognitivism in natural aesthetics. Even if, as I suggested in Chapter 1, our beliefs about unobservable entities can have an impact on the categories we view objects under, scientific cognitivism can still be usefully employed by all who hold the different views abut science discussed in this chapter. Scientific cognitivism proves itself malleable, open to different formulations according to these different views about the aims of science. Although scientific cognitivism takes on a different flavor depending on the view of science that informs it, it can be made to work with the rival positions in the scientific realism debate. In either case, scientific understanding of non-perceptual features of natural objects leads us to a more proper, more objective aesthetic appreciation.

# Chapter 3: The Cognitive Approach and Anti-Scientism

## Anti-Scientism

To this point I have construed the scientific realism debate narrowly, as involving a dispute over our scientific beliefs about microscopic or unobservable entities. Indeed, this is the arena usually intended when scientific realism is mentioned. Now, however, I wish to describe a larger debate that sometimes borrows part of the vocabulary of scientific realism. My concern in this chapter is to look at forms of anti-realism that are more radical than van Fraassen's constructive empiricism, and to see what implications accepting a radical anti-realist view of science might have to the employment of scientific cognitivism or the cognitive approach in natural aesthetics. Since the term 'anti-realism' is ambiguous and really only accurately describes a certain subset of the positions I want to look at, I will instead employ the terms 'anti-scientism' and 'anti-scientist' throughout this chapter.[45]

Anti-scientists answer the question "What is scientific knowledge?" differently than the scientific realists and constructive empiricists we have looked at. For both of the latter two groups, having scientific knowledge at least consists in having justified, approximately true beliefs about the observable phenomena of our experience. But, to sum up the anti-scientist view in a familiar slogan, *our scientific knowledge consists of mere social constructions*. In other words, under such a view either the truth of what science tells us or our justification for believing what science says is called into question in a radical way. The upshot of such questioning is that constructionist anti-scientists believe that science should not have the privileged position in our society that it currently occupies. Even when it comes to describing the observable phenomena we experience in the natural world, the description science gives should not be given primacy over other descriptions.

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[45] Nor am I entirely content with the terms 'anti-scientism' and 'anti-scientist'. These should be read as connoting an opposition to prevalent views about science – not necessarily to science *per se*.

Apart from the rough characterization above, it is not easy to define the position I call anti-scientism, for a plethora of notions fit the bill, and not all of them are always well-articulated. Instead of working on a precise definition, I will try to describe some important views that many anti-scientists share. Common to many versions of anti-scientism are concerns that western science has been developed only in western cultures, and largely by white males. Thus, perhaps science only advances its founders' cultural, racial, national, or gendered ideals, or science only derives from their very limited vision of the world. We tend to blindly accept the authority of the scientific establishment, say anti-scientists, when science is only a social institution describing one particularly narrow version of reality. Ian Hacking (1999) usefully identifies three "sticking points" (pp. 63-99) in the debates about social constructionism in science that will help us delve a bit deeper here. These sticking points are not areas where misunderstandings simply need to be sorted out; rather, they are issues on which clear, honest thinkers have genuine philosophical differences when it comes to their views about science. Anti-scientists need not get stuck on all three points, but they will likely find themselves siding with constructionists on at least one of these issues. In the following three sections I briefly discuss the three sticking points so as to bring out the constructionist view as well as the standard view.

## Contingency

Hacking's first sticking point is *contingency*. The idea here for the anti-scientist is that the natural sciences could have developed quite differently than in fact they have. As an example Hacking mentions the thesis that scientists may have never come up with the idea of quarks, and so high-energy physics in the last 40 years might not have taken general form that it did. Instead, say some constructionists, scientists could have come up with some alternative, equally successful science that followed along the path of pre-quark physics. Furthermore, this alternative physics would not be translatable into or reducible to our current physics. More generally, constructivists might say that any scientific theory or program is contingent, in the sense that some alternative, equally successful theory or program could have come to be a part of our mature science in its stead.

Of course, the constructionist view is to be contrasted with the more standard view that the advances of science are somehow pre-determined. On this standard view, it is not the case that the sciences had to develop, but rather it is the case that if they were to develop successfully they would have to do so in approximately the ways they in fact have. On this view, unless the high energy physics program stalled altogether, there could be no successful alternative to our quark-based outlook on high energy physics. Even alien scientists, if they were to practice physics successfully, would have to develop something like what we have.

Different intuitions compete over this question about the contingency of science. To fill out the constructionist view, the anti-scientist will have to say something about how success is measured, and will probably have to give some account of what an alternative to our extant science would look like. But those who maintain the standard view may be challenged to give an explanation of why science had to have developed as it did, especially in light of the history of science and recent work on scientific revolutions.[46] It is difficult to say where the burden of proof ultimately lies here. But if science could be very different than it is, i.e. if we could obtain drastically different categories from the sciences, this might spell trouble for scientific cognitivism. For, if this were the case, why should we suppose that the categories we derive from these contingent sciences are the correct ones for aesthetic appreciation?

### Nominalism

Hacking calls his second sticking point *nominalism*,[47] contending that some current debates in the philosophy of science mirror age-old arguments between realists and nominalists. To put this in a way familiar from the previous two chapters, a nominalist might argue that categories do not apply to nature at all. There are no natural kinds – no one thing in nature is picked out by the label 'mammal' or 'whale'; those are only names we choose to use. The natural sciences, though, are precisely in the business of providing us with categories about nature. Thus science produces fictions. While these fictitious categories can be useful, they certainly do not apply to the natural world, and so cannot be said to be correct descriptions of natural objects.

On Hacking's account realists argue that the world has a determinate, natural-kinds structure built into it. Our task in science, and as rational creatures more generally, is to try to identify the structure that is inherent in nature. We may fail in that task at times, but nature has indeed joints at which it can be carved. Here the successes of science may be seen as some evidence that we have not missed out on identifying nature's structure altogether.[48] We really are able to identify nature's own, correct categories.

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[46] See (Laudan, 1981) and (Kuhn, 1962), for example.

[47] Here is where the term 'radical anti-realism' would have been highly appropriate, for nominalism (historically) contrasts with realism.

Debates between realists and nominalists stretch far back into the history of philosophy. I will not retrace that history or try to add anything new. Suffice it here to say that nominalism presents a serious challenge to science and *pari passu* a serious challenge to scientific cognitivism. If we are nominalists, whether we can maintain a robust enough view of scientific knowledge to employ scientific cognitivism is an open question, but *prima facie* such a view will not be easy to uphold. If the categories provided by the natural sciences are mere fictions, why should we listen to the stories they tell? Why wouldn't other fictitious stories do just as well?

### Explanations of Stability

The final sticking point identified by Hacking involves our *explanations of the stability of science*. Some decades ago, Hacking says, it was all the rage to talk about the lack of stability in science and to focus our theorizing on scientific revolutions (p. 85).[49] Now, however, emphasis has shifted back to the relative stability of science, especially with respect to such long-standing scientific bastions as Maxwell's Equations and the Second Law of Thermodynamics – both so thoroughly entrenched in our scientific worldview that they merit capitalization. On the standard view, these scientific theories or laws are stable because they are at least approximately true. In other words, there are reasons internal to the stable aspects of our science that explain their stability.

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[48] Compare this to a common argument in the scientific realism debate, as discussed in Chapter 2. In that context, the success of scientific theories that invoke unobservable entities is seen as evidence that those theories capture the approximate truth about the world. See (Psillos, 1999, pp. 70-77 and 90-97).

[49] Some of this emphasis can be seen in the scientific realism debate as described in the previous chapter. In that context, Larry Laudan (1981) argued against scientific realism by making a 'pessimistic induction' from the history of science in an attempt to show that because of drastic theory changes in science, we are not justified in believing that what our scientific theories tell us about the unobservable world is true.

Constructionists generally maintain that the reasons we have stability in the sciences are external, i.e. they do not belong to the scientific theories or laws themselves. Instead parts of our sciences are stable because they derive from our cultural interests, and those cultural interests and the networks that underlie them persist. So, for example, a scientific theory is developed under the biases of its inventors.[50] These biases get written into the theory, infecting it through its vocabulary and general worldview. The society in which the scientists work also shares their biases and the new theory contributes to maintaining those biases in popular society. It is not because the theory 'gets the world right' that it manages to stick around for decades or centuries.

Interestingly, Hacking says that this sticking point also mirrors an old philosophical debate – in this case the debate between rationalists and empiricists, which can likewise be cast in terms of internal and external explanations for our confidence in facts about the world. If this is correct, then we have another case of a sticking point where intuitions and arguments have clashed for centuries. If we took the constructionist side on this sticking point, this might spell trouble for scientific cognitivism. If the categories given us by science are only stable because of cultural factors (and not because of internal reasons), we may again suspect that they are merely fictitious. Moreover, we may fear that as we undergo cultural changes our science and then our aesthetic judgments might have to change as well, robbing us of the timeless objectivity we hope for in aesthetics. If science is only as stable as the cultural interests that underlie it, should it be given a privileged position in our aesthetic theory?

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[50] Note that I do not use the word 'discoverers' here. Indeed, the issues raised in this word choice are at the heart of this sticking point.

### Scientific Cognitivism and Anti-Scientism

Because of what they think about the three sticking points discussed above, many come to the view that science is a social construct; and if science is only a social construct, they say, the position our society generally affords the natural sciences is too lofty. Science should not be considered the timeless, universal voice of reason, truth, and objectivity that our culture often takes it to be. Such an anti-scientist position clearly would affect how we view scientific cognitivism as a theory about the aesthetics of nature. As we have seen, scientific cognitivism relies strongly on using scientific knowledge to determine the correct categories for perceiving natural objects. But if this scientific knowledge is discredited by anti-scientism, we may be forced to abandon scientific cognitivism and try to revert to a different version of the cognitive approach. In the following sections, I identify two broad versions of anti-scientism that can interact with scientific cognitivism and, more generally, with the cognitive approach. I will dub these two versions *negative* anti-scientism and *positive* anti-scientism. Both offer distinct challenges to our cognitivist aesthetic theories.

### Negative Anti-Scientism

*Negative anti-scientism*, as I will use the phrase, is associated with the view that science simply needs to be taken down from its authoritative throne in our society. Anyone stuck on one of Hacking's philosophical points might come to such a view, as might anyone who is concerned about the narrow gender, racial and cultural confines in which most of western science has been practiced. Whatever the reasons leading to such a view, the negative anti-scientist believes that we should not give a privileged position to the natural sciences or (to put it more radically) pay any heed to science at all. What this means for the cognitive approach in aesthetics is simply that scientific knowledge should not be used as the basis for finding the correct categories under which to perceive natural objects. *Scientific* cognitivism, though not necessarily the cognitive approach itself, must be abandoned. In other words, neither claim (SC3) from the first chapter nor my proposed agnostic reinterpretations of (SC3) from the second chapter – (CA3) and (CI3) – are correct. As a reminder, here are those claims:

> (SC3) The natural sciences tell us what the correct categories are for natural objects.
> (CA3) The natural sciences, insofar as they tell us about observable entities, tell us what the correct categories are for natural objects.
> (CI3) The natural sciences recommend certain categories to us as the most useful and efficient ones for classifying natural objects.

One philosopher who at times seems to represent the negative anti-scientist position when it comes to his views about natural aesthetics is Stan Godlovitch.[51] Godlovitch (1994) argues against scientific cognitivism's reliance on science in a number of ways. First, he notes something I have claimed in this thesis: "if cognitivist aesthetics banks on the presumption of hard truth in science, it must face the challenge of Antirealists, Internal Realists, and Relativists" (p. 116). He then echoes a concern shared by many philosophers of science about theoretical discontinuity in the history of science: "Firm scientific categories have been mistaken; presumed natural kinds never have existed; stock theoretical terms failed to refer; grand theories have withered" (p. 116).[52] On Godlovitch's view, it would be problematic if we based an act of aesthetic appreciation on a scientific theory which later turned out to be false, for then that appreciation would turn out to have been groundless.[53] Next, Godlovitch claims that our aesthetic appreciation may be impoverished if we merely rely on the categories science provides: "Why restrict oneself to an aesthetic slavish to the kinds that science announces?" (p. 117). In the end, Godlovitch argues that science does not confront nature on nature's terms, but only on our human terms. Scientific theories are advanced in a context that is more concerned with issues like consistency with extant theories, experimental control, and verifiability than it is with understanding nature *qua* nature. By these sorts of means science tries to make nature intelligible to us, but:

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[51] It may not be entirely fair to call Godlovitch a negative anti-scientist across the board. He does maintain that turning to science in our aesthetic judgments can save us "from the provinciality of human scale" and that science "triumphs over against surface subjectivism" (1994, p. 115). So, it seems that for Godlovitch there are worse things than relying on science. Nevertheless, the position he advocates views science as ultimately incapable of serving as a solid basis for the aesthetic appreciation of nature.

> That intelligibility costs. Science de-mystifies nature by categorizing, quantifying, and patterning it. Under those frameworks, science makes intelligible the nature it divides, conquers and creates in theory. So, the object is still ours in a way; a complex artifact hewn out of the cryptic morass... Science ultimately disappoints… because it offers us only a gallery of our own articulated images (p. 117).

Instead of allowing ourselves to be disappointed by science, Godlovitch proposes that we stop trying to make nature intelligible to ourselves and instead approach it (aesthetically) with a sense of mystery. We ought to view nature as "categorically other than us" (p. 121) such that we cannot hope to understand nature or solve the mysteries it presents. If nature is radically other and inscrutable in this way, then science – as an attempt to approach nature on its own terms – is destined to fail.

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[52] Again, see (Laudan, 1981) for a prominent example.

[53] Incidentally, I don't agree with Godlovitch that it would be problematic that we might have to abandon our old aesthetic judgments. Isn't it even more serious that in such a case we would have to recant our scientific beliefs? Further, the reliance on a given failed scientific theory need not doom an aesthetic judgment altogether, for 1) the theory need not have been false through and through, and 2) the judgment need not have been *entirely* based on the scientific theory.

On a negative anti-scientist view like the one Godlovitch seems to represent, the natural sciences simply shouldn't be consulted at all as we establish the categories that should be used to aesthetically appreciate objects. Thus, if we took this position we would have to abandon scientific cognitivism and we would likely, following Godlovitch, abandon the cognitive approach altogether. Still, a negative anti-scientist might try to retain the cognitive approach by continuing to appreciate natural objects under categories. But without science providing us with those categories we are left with the conundrum presented in Chapter 1: Unlike in the art case where we can consult artists' intentions and an art-critical society, in nature appreciation we seemingly have no way of determining the correct categories for perceiving natural objects. If the natural sciences do not play this role for us, what will? On the standard view, we all more or less agree about scientific categories and so – whether they are the true categories or not – we maintain some objectivity in aesthetics by employing the categories science gives us. But if negative anti-scientists convince us that we should pay no heed to the categories described by the natural sciences, then this air of objectivity disappears. It is difficult to imagine what could take science's place here, for there is not obviously any other viable candidate to serve as a category-determining institution that we can come to some general agreement about. The negative anti-scientist who would try to retain the cognitive approach would have quite a bit of work to do here to show us what non-scientific views about nature we should listen to, and why. If, as seems likely under a negative anti-scientist position, we simply say that each person should come up with categories as he or she pleases, then we risk returning to the view that scientific cognitivism was meant to rectify, namely that natural aesthetics is hopelessly subjective.

## Positive Anti-Scientism

It is not ordinary to oppose science as wholeheartedly as the anti-scientists I described above. One can, after all, be an anti-scientist to a lesser or greater degree. A more common position is what I call *positive anti-scientism*. Positive anti-scientists also believe that science should not reign supreme, but not so much because their view of science is entirely disparaging. Rather, positive anti-scientists may be identified as those who believe that science provides just one of many legitimate perspectives on the natural world.[54] Rather than ridding our aesthetics of science altogether, positive anti-scientists seek to allow other voices to be heard as well when we establish categories for aesthetic appreciation.[55] These other voices may include things like the imagination, folktales, religious stories, or metaphysical narratives. By listening to these other voices, positive anti-scientists seek to find a more inclusive way of doing natural aesthetics than is invited by the science-based formulation of the cognitive approach I offered in the first chapter. For the positive anti-scientist, science is just one of many stories that can contribute to our obtaining the correct categories for aesthetically appreciating natural objects. Therefore, positive anti-scientists attempt to continue using the cognitive approach in natural aesthetics, only now with the added challenge of finding other forms of cognitivism than scientific cognitivism to fill out the cognitive approach.

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[54] Here my discomfort with the phrase 'anti-scientism' may be recalled. It is not science, *per se*, that the positive anti-scientist deplores; rather, it is giving science the best seat at the table.

[55] Of course, some positive anti-scientists might want to avoid the cognitive approach altogether, instead opting for some other approach to natural aesthetics. I'm only interested in looking at what the ramifications are for anti-scientists who do try to stick to the cognitive approach.

I will now describe two different versions of positive anti-scientism that have recently been voiced by philosophers interested in employing something like the cognitive approach in natural aesthetics. These are not the only possible positive anti-scientist positions, but I believe these two will serve to demonstrate the difficulties that can arise for cognitivists who take a positive anti-scientist position. I will spend a bit of time here describing how both thinkers argue against scientific cognitivism and for their own positions, but I have two main goals here. First, I want to look at what (besides the natural sciences) these anti-scientists propose to add to the list of institutions that provide us with the correct categories for the aesthetic appreciation of nature. Second, I want to see what ramifications these additions have towards our employment of the cognitive approach. Following each description I also offer some critical remarks about the view in question.

### Heyd's Many Stories

Thomas Heyd (2001) argues that "aesthetic appreciation does and should benefit from many, diverse stories, as gathered by people from a great variety of walks of life and cultures" (p. 269). Heyd objects to Carlson's scientific cognitivism by saying that knowledge about a work's origins is neither necessary nor sufficient for proper aesthetic appreciation of art, and likewise for knowledge about a natural object's origins. He compares having knowledge about an object's etiology to reading a biographical placard next to a painting – it may help us situate the work of art, but it is surely secondary to direct experience of the work. Heyd also objects that sometimes scientific knowledge may be harmful to our aesthetic appreciation of a natural object since "scientific knowledge characteristically draws our attention to the *theoretical* level" (p. 272) and this may distract us from the particular aesthetic object before us. Scientific knowledge should only be called upon, then, in cases in which it proves beneficial to aesthetic appreciation. If we appreciate X better when viewed under scientific categories, then it is proper in this case to listen to science's story about X. As Heyd seeks to open the door to other kinds of stories, he continues to employ this same criterion: if a story proves beneficial to our aesthetic appreciation, let it in. Some examples of other stories Heyd proposes we should listen to in order to get categories for aesthetic appreciation are artistic stories (as when a poet writes about a certain landscape), non-artistic stories (such as traditional myths and legends), and non-verbally expressed stories (such as those provided by paintings, buildings, and culinary delights). All of these illuminate nature for us and add significance to it (pp. 273-276).

Heyd considers several objections to his argument that are worth rehearsing briefly here. First, what if some stories that help us better appreciate nature are false? Should we be worried by this? Heyd doesn't think so because his emphasis is on having rich aesthetic experiences, not on getting appreciation right. To this end he suggests considering candidate stories functionally, according to how well they "illuminate the object of aesthetic consideration in a new and fruitful way" (p. 277).[56] Next, should we be worried that non-scientific stories are deeply cultural, and so not applicable to nature (which is inherently non-cultural)? Heyd's response is that scientific stories are also cultural – the practice of science itself is a phenomenon that occurs only in peculiar cultural circumstances. We should certainly not imagine, Heyd maintains, that science merely holds up a mirror to nature; rather, the picture of nature painted by science is distorted by culture as well. Finally, should we be worried that non-scientific stories are almost always developed to promote certain values? Again, Heyd's response is to note that scientific stories are also driven by certain values. Since science is no different from other stories in these respects, our only concerns should be functional: does the story we're considering enhance our aesthetic appreciation of the natural object in question? If so, we should allow that story to guide the categories we employ in perceiving the natural object.

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[56] I do not find this answer satisfactory, as shall become evident in my discussion about determining the appropriateness of non-scientific stories about nature. On my view, stories about nature are inappropriate if they misrepresent nature, even if they function admirably in giving us aesthetic experiences.

It seems to me that Heyd neglects one of the most important features of the cognitive approach, namely Walton's philosophical thesis that some categories are correct for perceiving works of art (and, on the analogous scientific cognitivist view, for perceiving natural objects). We may recall that Walton (1970) lists four criteria that are helpful in determining which categories are correct for perceiving a work. First, the work must have a large number of features standard with respect to the correct category (or categories). Second, the work should be "better, or more interesting or pleasing aesthetically, or more worth experiencing" (p. 69) in its correct category (or categories). This is the so-called 'beauty-making criterion' discussed by Parsons and mentioned in my first chapter. Third and fourth are the art-specific criteria of being intended to be in a certain category by the work's artist and being recognized to be in a category by the art-critical society in which the work is produced. The third and fourth criteria are the ones that scientific cognitivists hope to find an analogy for in the natural sciences. But it is the second criterion that seems to almost exclusively guide Heyd. He assumes that any category that makes a natural object more aesthetically appealing should be employed, that any such story is correct just because it makes the natural object appear more beautiful.

But Walton warns us right away in his "Categories of Art" against exclusively employing the beauty-making criterion. In a passage I have already alluded to in each of the first two chapters, Walton discusses why the second criterion is insufficient by itself:

> Take any work of art we can agree is of fourth- or fifth- or tenth-rate quality. It is quite possible that if this work were perceived in some farfetched set of categories that someone might dream up, it would appear to be first-rate, a masterpiece. Finding such *ad hoc* categories obviously would require talent and ingenuity… Surely, however, if there are categories waiting to be discovered which would transform a mediocre work into a masterpiece, it does not follow that the work really is a hitherto unrecognized masterpiece… It *cannot* be correct, I suggest, to perceive a work in categories which are totally foreign to the artist and his society, even if it comes across as a masterpiece in them (pp. 71-72).

Now, there may not be any such thing as fourth- or fifth- or tenth-rate nature, so Walton's analysis may not transfer precisely to the natural realm.[57] But the same danger seems inherent in the case of nature appreciation: if we only employ the beauty-making criterion, we may dream up *ad hoc* categories that don't really apply to natural objects at all. This may be fine if it is merely an aesthetic experience we are after, but is problematic if we want an aesthetic experience *of* a natural object – for in the latter case we must confront the natural object as what it really is. Perceiving a natural object for what it really is, after all, is the backbone of the cognitive approach as I introduced it in Chapter 1. If Heyd wants to do away with this altogether, he robs the cognitive approach of much of its philosophical power and gives us a theory that is unable to claim that it assesses natural objects on their own terms.

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[57] Heyd does not argue for the thesis that all of nature is of first-rate aesthetic quality – a version of the view called *positive aesthetics* (which I discuss in more detail in Chapter 4). If Heyd does not adhere to something like the positive aesthetics view, he leaves himself even more open to attack along the lines I suggest in this paragraph.

As I see it, there are two ways Heyd might respond to this sort of criticism. First, he might try to adopt something like the 'no-truth' interpretation of the cognitive approach discussed in the previous chapter. According to the no-truth strategy, we need not try to appreciate natural objects for what they really are, but we can still employ a form of the cognitive approach. Instead of trying to understand what natural objects really are, all we need to do is find categories that we can agree on and that bring out standard, variable, and contra-standard features of natural objects. On Heyd's view, many non-scientific stories might help us determine these categories just as well as our scientific stories do. As I argued in Chapter 2, employing the no-truth strategy yields a considerably weakened version of the cognitive approach that is cognitive only in the sense that it relies on our beliefs about natural objects (as opposed to relying on our knowledge of them). Following the diction from the previous chapter, we can call this version of the cognitive approach *belief-cognitivism*. Belief-cognitivists essentially propose that we should employ Walton's psychological thesis even though we are unable to employ his philosophical thesis. If Heyd only adopts belief-cognitivism, this might cause many proponents of the cognitive approach to shy away from his position. This is because we could be well-intentioned belief-cognitivists who nevertheless manage to appreciate natural objects as things they really are not by perceiving them in categories under which they do not really fall. Still, as we saw in the previous chapter, the cognitive approach is flexible: it is possible to adhere to belief-cognitivism and hold on to many of the merits of the cognitive approach. A chief concern in this regard would be showing that there are some non-scientific stories that we could come to a general consensus about, i.e. stories that we would choose to be the ones that will provide us with shared categories for appreciating nature. I will discuss this more when I consider the question of appropriateness of candidate stories about nature later in this chapter. For now, we can note that Heyd might want to adhere to belief-cognitivism if he holds the view that we can never *really* know what natural objects are like; neither science nor any other story about nature manages to get at the truth about what nature really is, so we just do the best appreciating we can with what we've got and use any stories at our disposal towards that end.

Heyd's other possible line of response is to try to stick to the more robust version of the cognitive approach – *knowledge-cognitivism* – according to which knowledge about natural objects is essential. Heyd might take this approach if he believes we can really know what natural objects are like, but it is simply the case that science does not have a monopoly on giving us this information. Some non-scientific stories do just as good a job of describing natural objects for what they really are. Here, science and Heyd's other stories are still seen as merely social constructs, pairs of culturally-colored goggles through which we attempt to view nature, but those goggles work pretty well. If Heyd takes this line, he'll have some more explaining to do. In what sense do a folktale and a scientific story both get at what a natural object is really like, especially given that they might tell different stories about the same natural object? I will dig deeper into these issues later in this chapter and consider some ways in which a positive anti-scientist might begin to address questions like the one above.

At this time, I suggest that we may not be able to proceed much more along these lines without knowing more about what motivates Heyd's anti-scientist views and whether he will opt for belief-cognitivism or knowledge-cognitivism. Ideally, though, whichever strategy he takes will appeal to more than the beauty-making criterion to help determine which other stories we should listen to. This is because if we only employ the beauty-making criterion, as Heyd seems to suggest, we lose the ability to argue that we are making correct aesthetic judgments about natural objects and so we neglect knowledge-cognitivism's directive to aesthetically confront natural objects as what they really are. Even if he opts for belief-cognitivism, Heyd will feel this same strain, for even if we all agree on some categories to employ, it is undesirable to aesthetically miss the mark about what natural objects are altogether, as belief-cognitivism seems to allow. So, even belief-cognitivism would need to somehow distinguish appropriate from inappropriate stories for the purposes of aesthetic appreciation. It's not enough that a story about a natural object would enhance our aesthetic appreciation of it; the story must also (at least) not badly misrepresent the natural object in question.[58] The beauty-making criterion alone is insufficient for deciding which stories about nature we should listen to as we appreciate it aesthetically.

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[58] Remember here that (since he's not a negative anti-scientist) Heyd can still appeal to scientific knowledge, in a limited way, to help us determine whether a story drastically misrepresents a natural object. Or perhaps he could turn to 'common-sense' knowledge for this task. So, for example, a folk-story about goats that says goats have the capacity to fly to the moon under the cover of darkness will probably not be a story Heyd would want to listen to – even if it leads us to have marvelous aesthetic experiences! – simply because it seems to get the facts about goats quite wrong.

## Brady's Imagination-Based Approach

Emily Brady (1998) takes a similar anti-scientist position, arguing that "scientific knowledge is too constraining as a guide for appreciation of nature *qua* aesthetic object" (p. 156). Much in line with Heyd, Brady says "I am not suggesting a formalist approach, which makes knowledge irrelevant to aesthetic appreciation… All sorts of knowledge may be appropriate according to the particular object of appreciation, e.g. the cultural narratives of history, religion, and folklore. However, while such knowledge may expand appreciation… [it] is not always essential to appreciation" (p.158). Brady's emphasis is instead on the importance of the imagination in aesthetic appreciation. To come to her position, Brady begins by pointing out a weakness in the analogy Carlson tries to draw between art appreciation and nature appreciation. With art, Walton suggests we look at a work's history to guide our aesthetic appreciation. With nature, Carlson wants us to do the same. But Brady raises a version of the relevant-categories problem (as discussed in Chapter 1) to argue that Carlson's "model cannot provide a clear answer to the problem of what grounds aesthetic appreciation of nature" (p. 158).[59] Basically, Brady's complaint is that scientific cognitivism does not tell us how specific our categories need to be in order to appreciate a natural object. She also warns that a disadvantage of scientific cognitivism is that it may tend to run scientific value and aesthetic value together since it doesn't emphasize perception and imagination – each a *sine qua non* of aesthetic appreciation. Finally, Brady objects to scientific cognitivism because nature demands “freedom, flexibility, and creativity” (p. 159) from our aesthetic responses, and a cognitivist reliance on science impedes the free character of our aesthetic appreciation.

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[59] Brady comes to this conclusion via consideration of Carlson's inclusion of common-sense knowledge, along with scientific knowledge, as aesthetically relevant. For a criticism of Carlson's reliance on scientific knowledge and some insight into his inclusion of common-sense knowledge in the cognitive approach, see (Carroll, 1993, pp. 94-97).

What does Brady offer instead of scientific cognitivism? She calls her position “loosely Kantian” (p. 160) since it emphasizes the free, disinterested character of aesthetic experience.[60] To begin, she says, we must stress the importance of perceptual exploration of nature. No amount of scientific information can take the place of attentive, perceptual exploration of a natural object. Our perception is strongly tied up with imagination: “Imagination encourages a variety of possible perceptual perspectives on a single natural object… thereby expanding and enriching appreciation” (p. 161). Our perception, in turn, provides the raw materials upon which the imagination can work. Brady goes on to discuss four modes of imaginative activity that can affect our aesthetic appreciation of natural objects.[61] To put all this in terms familiar from the discussion by Heyd, our imagination can supply us with ‘stories’ about natural objects that enhance our aesthetic experience of them. Instead of looking to already-established artistic or cultural stories, as Heyd seems to do, Brady proposes writing our own stories – by using our imaginations – to help us in appreciating nature. As an example, she talks about inspecting a locust tree and imagining mountainous qualities as well as old-man qualities in the tree. “These imaginings lead to an aesthetic judgment of the tree as stalwart, and I respect it as I might a wise old sage” (p. 162). So, without dismissing the role of science altogether, Brady emphasizes the importance of the imagination in creating the stories and categories that ultimately guide our aesthetic appreciation of nature. Her view is probably more closely related to belief-cognitivism than it is to knowledge-cognitivism, since our imagined stories can scarcely be thought of as providing us with knowledge about what a natural object is really like. Rather, imagined stories give us a way of using our own concepts about natural objects to affect the categories we view them as falling under and hence to affect our aesthetic appreciation of them.

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[60] For more on Kant’s aesthetics see (Kant, 1790).

[61] Though interesting in their own right, I choose not to spend time discussing these here. The four modes are: 1) exploratory, 2) projective, 3) ampliative, and 4) revelatory. See (Brady, 1998, pp. 161-163).

Brady is quick to acknowledge an apparent weakness in her position: can't some sorts of imaginings about nature be inappropriate? Can we just allow any sort of imagination to run free as we aesthetically appreciate nature, or will this trivialize the objects of appreciation? If we use our aesthetic imaginations inappropriately we risk making ignorant, selfishly-motivated, naïve, shallow, or overly sentimentalized aesthetic judgments.[62] Brady admits that not all imaginative responses to nature are appropriate. She attempts to address this weakness in her position by appealing to two guidelines to help us discriminate between appropriate and inappropriate imaginative appreciation. The first guideline, disinterestedness, has a hallowed tradition in aesthetics.[63] Brady's second guideline involves seeing imagining as a virtue, "so that we 'imagine well' when we use imagination skillfully and appropriately" (p. 165). Just as moral virtues must be developed so that we know how to respond to morally charged situations that arise in certain contexts, so we must learn to develop our aesthetic imaginations so that we know how to respond appreciatively to nature. "'Imagining well' involves spotting aesthetic potential, having a sense of what to look for, and knowing when to clip the wings of imagination" (p. 166). Clipping the wings of the imagination, then, involves eliminating inappropriate aesthetic imaginings.

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[62] This is essentially the same risk that Heyd takes if he adopts mere belief-cognitivism. As I suggested earlier, even belief-cognitivists must be wary of allowing any old story in the door, since some stories about natural objects may drastically misrepresent the objects in question.

[63] See (Kant, 1790, pp. 41-50) for one classic statement.

I think that Marcia Muelder Eaton provides a very helpful defense of scientific cognitivism in response to Brady's position. The gist of Eaton's response is as follows. There may indeed be circumstances under which using our imaginations will help us to appropriately and fully appreciate natural objects. And Brady is right to note that the imagination must be curbed so as to eliminate inappropriate aesthetic appreciation. However, the guidelines Brady provides do not adequately distinguish appropriate from inappropriate imagination. Disinterestedness is a good start to help us get rid of selfishly-motivated imaginings, but the 'imagining well' guideline by itself is not really helpful at all. This is because when we try to apply this guideline we have no means by which to measure, in any given situation, whether we are imagining well or not. To remedy this, Eaton (1998) suggests that we return to scientific cognitivism: "Knowledge does not simply deepen the experiences that imagination provides; it directs them, or should direct them if we hope to preserve and design sustainable landscapes" (p. 175). We imagine well if our imagining is in line with scientific knowledge about nature, if fiction is "at the service of fact" (p. 178). The imagination alone will not suffice, says Eaton, but it may aid our aesthetic appreciation by helping to prolong our interest in natural objects. In the end, Eaton's response is to allow for non-scientific stories to figure in our aesthetic appreciation, but only if those stories are directed and moderated by scientific truth. Note, however, that this response brings scientific knowledge back into a privileged position in our aesthetic theory. As such, it would not be acceptable to an anti-scientist.

### Established v. Novel Stories

We have come across a recurring issue for both of these positive anti-scientist positions when they try to allow other, non-scientific stories to figure into aesthetic appreciation. In such cases, the positive anti-scientist must make sure those other stories are *appropriate*. Simply looking at whether a story helps us to have a good aesthetic experience is inadequate since this does not guarantee that the experience is really of the natural object in question. Moreover, our own imagined stories must be carefully scrutinized to make sure that they do not lead us to overly sentimentalize or misconstrue natural objects. In other words, the challenge here is living up to knowledge-cognitivism's mandate to appreciate natural objects for what they really are, and yet avoid ultimately falling back on science, as Eaton suggests we should do. Even belief-cognitivists, I have maintained, must remain sensitive to the issue of appropriateness since some stories can strongly misrepresent natural objects. How can we begin to investigate this issue of the appropriateness of non-scientific stories about nature?

One striking difference between Heyd's and Brady's positions is that Heyd seems to rely on *established* stories where Brady talks about *inventing* our own stories. Heyd's examples of stories that can guide our aesthetic appreciation include stories written by great artists, deeply culturally-embedded folkloric stories, and the like. Brady, in contrast, talks about individuals coming up with their own imaginative ways of appreciating natural objects, such as when we imagine we see shapes in the clouds. Recall that one of our desiderata for an aesthetic theory about nature is its ability to help us make objective judgments that most people can agree upon. If we allow well-established stories to influence our aesthetic judgments, perhaps we will end up with a more objective account than if we allow mere imaginative flights of fancy to influence our aesthetics. Indeed, one objection to Brady's account might be that if we allow each individual's imagination to influence his or her aesthetic judgments, then we may not end up with anything we can agree upon consistently. What strikes me as a delicate tree may strike you as a resilient tree because I have imagined it as a young child and you have imagined it as a survivor of illness. What is the correct aesthetic assessment of the tree? Must we just admit that we cannot make such an assessment? Unless we fall back on scientific knowledge of the tree, the imagination-based account seems to lead us towards this sort of subjectivism.

But notice that even if we rely on established stories, as Heyd does, we don't get out of these difficulties entirely. This is simply because established stories, whether they are cultural, religious, folkloric, or what have you, are also subject to revision and replacement by other stories and are subject to challenge from different stories. Even though relying on established stories may help us to find aesthetic judgments we can mostly agree on, we will not get complete objectivity from such stories. We live in a multicultural, religiously and socially diverse milieu which changes like a Heraclitean fire. Many of the culturally established stories Heyd discusses are probably generally too unstable to be considered appropriate because they derive from this milieu. Of course, an anti-scientist might respond that science is also constantly changing, and so science also does not provide us with a stable base of facts upon which we can all agree. But as I mentioned earlier, there are at least aspects of scientific theories that are now very firmly established in our western worldviews – far more so than many other cultural stories we tell. Still, Heyd might maintain that some of our cultural stories – perhaps the ones based on religion, great works of art, or long-standing metaphysical themes – can incite nearly as much agreement as our current scientific stories. In this way Heyd's reliance on established stories may help his view come closer to living up to the objectivity desideratum than Brady's view can.

If we want to apply the cognitive approach to nature as positive anti-scientists, it may be the case that being well-established is a necessary condition for a story to count as appropriate. In Walton's art examples, the appropriate categories are usually those that form part of the society's established art-critical background. There are, of course, interesting cases in which an artist invents a category that is hitherto not well-established. Walton (1970) considers such a case and sides with the artist (p. 72). But there are no artists with respect to nature, so a parallel difficulty does not arise there. When it comes to determining whether we should consider our scientific stories about nature to be appropriate, it seems we should require them to be well-established. Both scientific realists and positive anti-scientists agree that scientific stories are among the stories we should heed, but they will probably be wise to restrict those scientific stories to the ones currently accepted as part of our mature science. For example, we would not want to allow phlogiston theory or a 12th century system of zoological classification to help us determine the categories deemed appropriate for the aesthetic appreciation of any natural object. For any scientific theory to become a part of our mature sciences, it must establish itself in certain ways – for example, by showing that it can save the phenomena and solve problems that competitor theories cannot. This sort of establishment can happen quickly or over time, but I take it that it must happen for a scientific theory if it is to be one of the theories we heed while employing the cognitive approach.[64] Similar considerations might hold for non-scientific stories about nature. They must be somehow well-established – in a sense that would need to be more precisely worked out – before they would be allowed to pull any aesthetic weight. It does not seem, however, that being well-established is sufficient for a story to count as appropriate for the cognitive approach. This is because there is no reason to suppose that all well-established stories about nature are really directed at natural objects in an appropriate way. A very old folktale could overly sentimentalize a natural object every bit as much as a newly imagined story, and would thereby fail to lead to appreciation of the natural object as what it really is.

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[64] This is a drastically oversimplified account of theory-establishment. For a more thorough treatment, see (Kuhn, 1962, esp. ch. XII). If we listen to Kuhn, in periods of revolutionary science theory or paradigm establishment can come about quite quickly. Consider his example of the 'discovery' of oxygen, which

**Object-directedness**

Another consideration that crops up for positive anti-scientists seeking appropriate stories under the cognitive approach has to do with what I will call the *object-directedness* of a candidate story. Some stories that refer to natural objects are not really directed at explaining the natural object at all, but are instead intended for some other purpose. For example, a fable whose main character is a fox might be intended as a lesson about deceitful human behavior instead of as a story about foxes. But other stories that refer to natural objects serve no other purpose than to give some insight into those natural objects. A folk tale that tells 'how the turtle got its shell' without packing in a moral lesson might be an example of such a story. Yuriko Saito (1998) discusses object-directedness in this way:

> Some myths and folktales are about human deeds with natural objects as their backdrop and props… However, there are other kinds of

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occurred sometime (but at no precise time) between 1774 and 1777 and which almost single-handedly fueled the chemical revolution (pp. 53-56) and quickly ushered in a new scientific paradigm.

> myths, folklore, and indigenous tales that attempt to explain or make sense of observable features of specific natural objects. Unlike the associationist appreciation where the primary interest is human deeds, the interests that motivate these narratives are the shape of a mountain, the particular climate of a region, the spawning behavior of a fish, [etc.] (p. 150).

Perhaps object-directedness is an important feature of appropriate stories about nature, for object-directed stories show a sensitivity to natural objects themselves and aim to appreciate them for what they are, quite apart from human interests.[65] As with the criterion of being well-established, being object-directed seems like it might be a necessary condition for candidate stories to be considered appropriate under the cognitive approach, but not a sufficient condition. Being object-directed is a necessary condition simply because the cognitive approach seeks to appreciate natural objects for what they really are, on their own terms. Generally, stories that refer to natural objects in order to put them to some human use do not illuminate the natural objects themselves.[66] Even belief-cognitivists might want to restrict themselves to object-directed stories since object-directedness would help eliminate many inappropriate stories. But being object-directed is probably not a sufficient condition for a story about nature to count as appropriate under the cognitive approach. Consider a case where a story is told about an object for no purpose other than to describe the object, but which gets some fact about the object utterly wrong.[67]

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[65] The object-directedness requirement builds in disinterestedness, but adds to it the idea that the object be sized up 'on its own terms'.

[66] Recall that more radical anti-scientists like Godlovitch might claim that though science purports to be an object-directed enterprise, it does not at all succeed in being object-directed since its purpose is to make nature intelligible to human beings. But if we allow for this, then all stories, whether scientific or not, necessarily fail to be object-directed and so fail to be appropriate on the cognitive approach's terms.

[67] Here again the tendency is to fall back on either science, as Eaton suggests, or on so-called 'common-sense' knowledge. It seems like we need some way to rule out stories that treat whales as fish and bears as rock-eaters, even when those stories are well-established and object-directed. There is a deep intuition that

### Effectiveness

One final factor I will consider that may help determine the appropriateness of a story about nature is what I call the *effectiveness* of the story. A story that imparts some folk-knowledge about the thistle root may tell us that the thistle root is good at soothing aching teeth. This story is effective if it proves to be the case that thistle root really does help people deal with toothaches. Effectiveness indicates that a story is properly related to nature in some important way, that it gets something about the world right. Scientific stories, of course, are paradigmatically effective. But if we consider folk-knowledge non-scientific, then non-scientific stories may also be effective in this way. There may be some question about whether folk-knowledge bleeds into scientific knowledge, or at least constitutes some sort of proto-scientific knowledge. Regardless, it is certainly often the case that effective stories will strike us as more appropriate category-determiners than non-effective stories about nature. Nevertheless, effectiveness should not be seen as a necessary condition for the appropriateness of stories to be used in aesthetic appreciation, since measuring effectiveness involves looking at a story's practical applications, and we should probably not make practical applicability required for aesthetic appreciation.

### A Non-Scientific Cognitive Approach

Ultimately, my concern here is to investigate whether positive anti-scientists can allow other stories to stand alongside science and still maintain the cognitive approach. I contend that neither Heyd nor Brady is truly a cognitivist. Both want to downplay the role that scientific knowledge plays in aesthetic appreciation of nature, though neither

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our stories should not be founded on falsehoods, and it is science and common-sense – broadly speaking – that help us determine the truth about nature.

wants to rule out science altogether. But neither insists that *any* sort of cognition is necessary for proper and full aesthetic appreciation. As we have seen, Heyd's emphasis is on having aesthetic experiences; if knowledge or belief of some sort – either of folklore or cultural history or science – helps you have an aesthetic experience, then so much the better. But neither any kind of knowledge nor any kind of belief is a necessary condition for proper aesthetic appreciation on Heyd's view. Thus he cannot properly be called cognitivist. For Brady, knowledge is also not a necessary condition, for our own imagined stories cannot be described as involving knowledge about the object of appreciation. They are fictitious stories through and through. Though she doesn't talk in quite this way, Brady might be able to try to retain Walton's psychological thesis and his categories apparatus in her imagination-based account, thus embodying a sort of belief-cognitivist view. Using the categories provided by the imagination, we can still 'see the tree *as*' an old man, for example. But Brady herself does not take this cognitivist route, and in the end does not consider herself a cognitivist.[68]

Just because these two theorists fail to embody the cognitive approach does not mean that we could not hope to retain a version of it under a positive anti-scientist view. To develop this, as I have discussed at length, we would need to be able to show which non-scientific stories about nature are appropriate and we would need to rely on more than the beauty-making criterion to determine appropriateness. Some of the considerations we might use to determine appropriateness are whether the story is well-established, whether the story is object-directed, and whether the story is effective. Although none of these considerations seems to give us necessary and sufficient conditions for the appropriateness of a story about nature, if we use all of these considerations together we may be able to weed out most inappropriate stories. With all this in mind, perhaps we can envision a cognitivist anti-scientist making use of some non-scientific stories about nature. Such a view is not wholly implausible, and it may provide us with a way of retaining the cognitive approach under an anti-scientist position.

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[68] For more on Brady's non-cognitivist theory, see her (2003), especially Chapters 4-6.

Nevertheless, this positive anti-scientist sort of view gives us a much weaker version of the cognitive approach than does scientific cognitivism. In our culture, at least, science is generally seen as providing us with the best-established stories about nature, the most object-directed stories about nature, and the most effective nature stories. So, it may be a struggle to get people to agree that we should accept these other non-scientific stories, and the desiderata of objectivity and confidence may suffer as a result. Furthermore, it seems this view would sacrifice the alliance with ecology, since non-scientific stories about nature could very well be at odds with or tangential to ecological concerns. Perhaps the worst difficulty is this: positive anti-scientists presumably want to consider *many* non-scientific stories appropriate – after all, it is the putative fact that science is not a better story than many others that makes them want to be anti-scientists. But it is hard to imagine many other stories that will meet the criteria for appropriateness, as sketched out above, as well as scientific stories. Therefore, the positive anti-scientist's tendency will be to try to relax the criteria for appropriateness. When this happens, we end up with a significantly weakened version of the cognitive approach. To the degree that stories fail to meet the criteria for appropriateness they also fail to live up to the cognitive approach's mandate to appreciate natural objects for what they really are and fail to match the strengths that scientific stories exemplify. Thus, when we add non-scientific stories to the mix, we dilute the cognitive approach and lose out on some of its merits.

**Relativist Twists**

In concluding the last section I began a sentence with, 'In our culture, at least.' At one point Carlson (2004) hints that a way to overcome the distance between his position and Heyd's might be to re-envision the cognitive approach by adopting a "pluralistic or relativistic account of the aesthetic appreciation of nature" (p. 24). Carlson does not fully develop this relativistic view, but he seems to have in mind here that a positive anti-scientist could argue that categories for appreciating nature are correct only relative to a culture. According to this sort of view, in our culture science plays a prominent role and so should be given a privileged position in our aesthetics. Meanwhile, in other cultures traditional myths might have a larger influence. It is appropriate for us to listen to an evolutionary explanation of how the turtle got its shell, while for people in another culture it may be appropriate to listen to a folk tale about the turtle. We might end up with different aesthetic judgments about the turtle at the end of the day, but each is appropriate in its cultural context.

This relativist view clearly waters down the cognitive approach by limiting its applications to specific cultural contexts and making aesthetic judgments correct or incorrect only relative to a culture. But perhaps it still leaves the positive anti-scientist with something recognizable as the cognitive approach, while at the same time showing how non-scientific stories can be appropriate for aesthetic appreciation under certain circumstances. Problematically, though, relativizing the cognitive approach would force the cognitivist to defend a position in aesthetics that runs parallel to a position many find untenable in ethics. Some of the questions that would need to be confronted here are: What constitutes a culture? What do we do in cases where there is intra-cultural disagreement about the appropriateness of stories? What do we do in cases where cultures come into contact with each other? Would this relativism badly undermine our aesthetic confidence? It is far from clear how such questions should be answered, and it is not evident that a relativistic cognitive approach could provide us with an account that adequately meets the desiderata laid out in Chapter 1. Although consideration of all these issues would require another chapter, for now we can note that the cognitivist may not be willing to take on all this relativist baggage.

Another sort of relativist approach suggested by Saito (1998) and Carlson (2001) involves viewing natural objects as geographically and culturally situated, such that with respect to a given natural object, one culture may be said to be in the best position to tell its story. Unlike the previous relativist twist that allowed for different cultures to tell equally legitimate stories about the same phenomena, here the appropriateness of stories is seen as relative to the situated-ness of the natural object. One way to spell this out is to supplement the cognitive approach with a bioregionalist account of places and natural objects. According to Jim Dodge (1981), bioregionalism gives great importance to the natural system and its "community of interdependent life," and to this it "adds the influences of cultural behavior" (p. 355). Thus bioregionalism views natural systems – for example, as demarcated by watersheds or biotic shifts – and the natural objects in them as fundamental natural divisions. Among the natural objects that belong to a natural system are the human inhabitants of that system and their culture, and to these inhabitants and their culture belongs the right to write stories about that natural system. From these inhabitants we get stories "not of universal truth, but of local truth, bioregional truth" (Jim Cheney, quoted in Saito, 1998, p. 150). The bioregionalist view might give the positive anti-scientist another relativist way of determining the appropriateness of stories. But again it requires the adoption of some extra theoretical baggage, of both the relativist sort and the bioregionalist sort. Some questions that would need to be dealt with here are: How exactly do we define bioregions? How do we analyze stories about natural objects – like igneous rocks – that occur in many different bioregions? Do we only listen to stories told by indigenous persons or is there a place for stories written by people who have recently relocated to this natural system? And so on.

Both of these relativist twists seem to provide positive anti-scientists with ways of explaining how non-scientific stories can, in certain contexts, be just as appropriate as scientific stories for aesthetic appreciation. But both twists require the would-be cognitivist to adopt relativist positions that may be unpalatable. And as we saw in the last section, without a relativist account, when we try to allow non-scientific stories to fill out our picture of natural aesthetics, we have difficulty determining which of these stories are appropriate and which are not, and we ultimately weaken the cognitive approach.

## Conclusion

In this chapter I have described a broader version of the scientific realism debate than the version discussed in Chapter 2. Here my concern was to discuss the view that science should not be seen as providing the true or most accurate story about the world, and so science should not be given the lofty position that our society affords it. If the anti-scientist view is right, then both scientific cognitivism and the cognitive approach in natural aesthetics, more generally, are challenged. Scientific cognitivism, as I have described it in the previous chapters, holds that we should think of science as providing us with the correct categories for aesthetically appreciating natural objects. But if in general we should not listen to science at all, or if we should listen to other stories about nature at least as much as we listen to science's story, then it seems we should do likewise in our aesthetics. If as negative anti-scientists we do not listen to science at all in natural aesthetics, then we are left with a situation similar to the one that existed prior to the development of scientific cognitivism: we do not have an analog for Walton's theory of art appreciation when it comes to nature.

But if as positive anti-scientists we try to allow other stories to figure in to our aesthetics, we run into problems as well. When we attempt to retain the cognitive approach without privileging scientific stories, the main issue that arises is how to determine whether these other stories are appropriate for approaching nature. Inappropriate stories do not address nature for what it really is, and so must be avoided as we consider the stories we should use to help us determine categories for perceiving nature. I have described two views that attempt to make room for non-scientific stories in the aesthetic appreciation of nature and I have argued that neither Heyd's nor Brady's view gives the cognitivist anti-scientist an adequate account of how to get the appropriate stories about nature. Indeed, determining the appropriateness of stories is problematic. Although finding a list of necessary and sufficient conditions is difficult here, stories generally seem more appropriate if they are well-established, object-directed, and effective. Provided we have criteria such as these with which to measure the appropriateness of non-scientific stories, constructing a positive anti-scientist version of the cognitive approach is not wholly implausible.

Nevertheless, such a positive anti-scientist view proves significantly weaker than scientific cognitivism. Scientific stories in our culture, even from a positive anti-scientist's perspective, are clearly usually better-established, more object-directed, and more effective than most other candidate stories. So if we try to allow many other stories to stand alongside our scientific stories we must relax the standards for appropriateness, and then we end up with a much weaker version of the cognitive approach. On the one hand, there will not be as much agreement over these other stories, and so we risk losing the objectivity that scientific cognitivism attempts to give us and the confidence we can have in our aesthetic judgments. On the other hand, these other stories that do not meet the same standards as scientific stories (for being well-established, object-directed, and effective) will in those respects fail to approach natural objects on their own terms, for what they really are. Both of these are serious concerns.

From all this we can conclude that depending on how serious anti-scientist critiques are to be taken, the cognitive approach may be less attractive than it initially appears. If negative anti-scientists are right, we may have to scrap both scientific cognitivism and the cognitive approach altogether. If positive anti-scientists are right, the most we can hope for from the cognitive approach is a considerably weaker aesthetic theory than scientific cognitivism proposes, either because we will listen to some stories whose appropriateness is questionable or because we will adopt a relativist form of the cognitive approach. If these weaker versions are all that's available, this may not be enough to make us want to be cognitivists.

What we should bear in mind is that the philosophy of science work probably needs to be done first. If as philosophers of science we determine that we should be anti-scientists, then the cognitive approach will simply have to be discarded or accepted in its weakened form. Our desire to have a fruitful aesthetic theory of nature seems rather less important than whatever conclusions we might come to about the prominence we should give to science. Only after having decided about our view of science can we begin to worry about what we are left with in natural aesthetics. Concerns about developing an aesthetic theory probably shouldn't affect our views about the priority of science, unless they do so in some subtle ways that I will discuss in Chapter 4. So I conclude here that anti-scientism poses a rather serious challenge to the cognitive approach in natural aesthetics. Unlike in the previous chapter where various reinterpretations of scientific cognitivism seemed to make it palatable in light of constructive empiricism, there seems little hope of retaining a robust version of the cognitive approach in light of anti-scientism. While an anti-scientist can try to maintain the cognitive approach, the theory does not seem so desirable once scientific stories are watered down by other stories.

# Chapter 4: Positive Aesthetics and Scientific Knowledge

## Introduction

In this chapter I will sketch out how one might begin to apply the sort of philosophy of science analysis employed in the previous three chapters to another theory in natural aesthetics – positive aesthetics. Positive aesthetics is the view that "the natural environment, insofar as it is untouched by humans, has mainly positive aesthetic qualities" (Carlson, 2000, p. 72). In other words, pristine nature is or appears aesthetically good. A number of philosophers, including Holmes Rolston III and Leonard Fells have recently latched on to positive aesthetics. Carlson, a chief proponent of the cognitive approach, is also a leading advocate for positive aesthetics. His argument for positive aesthetics compliments his scientific cognitivism in that both appeal to science and scientific understanding to make their case. Carlson is not alone in offering a science-based argument for positive aesthetics – Rolston, for example, advances a similar view[69] – but here I will describe Carlson's version of the argument. Since their reliance on science is similar, I will here subject the positive aesthetics view to an examination similar to that applied to scientific cognitivism in the preceding chapters. My objective is to see whether the science-based positive aesthetics thesis is equally well supported no matter which position we take in the scientific realism debates. In this chapter I will not rehearse much of what has gone before, but will instead presuppose acquaintance with the foregoing descriptions of scientific realism, constructive empiricism, and the position

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[69] See (Rolston III, 1988, pp. 237-245). Rolston's argument for positive aesthetics stresses using science to expand the scope of our aesthetic judgments when we first find some natural object ugly. When seen in light of the bigger picture painted by ecological science, even a rotting carcass appears somewhat aesthetically appealing.

I have called anti-scientism. To begin, though, I must describe positive aesthetics a bit more fully and lay out Carlson's argument for the view.

The positive aesthetics thesis states that pristine nature is or appears to be aesthetically good. Many thinkers have rightly pointed out that in this form positive aesthetics is understated; it could be taken to mean a number of different things. So, for example, Malcolm Budd (2000) questions the intended scope of the positive aesthetics thesis (Does it apply to nature taken as a whole? To each natural kind? To each natural object?), the intended strength of the positive aesthetics thesis (Has pristine nature no negative qualities? Or are any negative qualities simply always outweighed by the good?), and the modal status of the positive aesthetics thesis (Is the thesis a necessary truth, or might nature have been otherwise?) (pp. 144-145). Similarly, Ned Hettinger points out that at least four claims could be "associated with Carlson's positive aesthetics" (p. 59). These are the claims that untouched nature essentially has positive aesthetic qualities, that negative judgments about nature are out of place, that all of nature is of equal aesthetic worth, and that our natural world is the best of all possible worlds, aesthetically. Instead of picking one of these claims to stick with or spelling out just what a positive aesthetics view ought to consist of, I will work with Carlson's vaguer statement: Nature, insofar as it is unaffected by humans, is or appears to be basically aesthetically good. Note, though, that this vague statement can be separated into a strong version of positive aesthetics and a weak version. According to the strong version, pristine nature *is* really aesthetically good. According to the weak version, pristine nature only *appears to be* aesthetically good. I will return to this distinction shortly.

Carlson (2000) considers several sorts of arguments that could be used to defend the positive aesthetics thesis. Among these are arguments that insist that nature appreciation is non-aesthetic (and so inherently non-critical, unlike art appreciation), arguments that focus on nature being sublime and beyond human control, arguments based on theism, and arguments based on science (pp. 76-84). Apart from the last way, Carlson finds all of these sorts of arguments wanting. In this chapter I will only explore the science-based explanation Carlson offers for the positive aesthetics thesis. As in previous chapters, my emphasis is on discovering what effects the outcome of debates over realism in the philosophy of science would have on our employment of a science-based theory in natural aesthetics. Note that my analysis only applies to the science-based argument for positive aesthetics inasmuch as the scientific realism debates would presumably not affect any of these other ways of arguing for positive aesthetics.

Carlson's primary argument for positive aesthetics starts with the suggestion that our scientific knowledge about the natural world transforms nature for us by helping us to see beauty in nature in new ways. Thus the preliminary basis for the argument lies in the cognitive approach: "the aesthetic qualities natural objects and landscapes appear to have depend upon how they are perceived" (p. 89). This is Walton's psychological thesis again. Furthermore, Walton's philosophical thesis holds – in order to properly appreciate natural objects we must perceive them in their correct categories. Finally, the natural sciences provide us with the correct categories for perceiving natural objects. Now, if the positive aesthetics view is correct, natural objects must be or appear aesthetically good when perceived in their correct categories, i.e. the categories provided by the natural sciences. Carlson notes that the positive aesthetics position cannot hold for works of art simply because of the sorts of thing works of art are, for in art "determinations of categories and of their correctness are in general prior to and independent of considerations of aesthetic goodness" (p. 91). Since what makes a category correct for an artwork is heavily tied up with its creator's intentions, for example, the artwork can fail to live up to the ideals of the category for which it was created and so can be an aesthetically bad, poor exemplar of the category. With art, it is quite possible that we should examine a work in its correct categories and still find it aesthetically poor.

But when it comes to nature, Carlson argues, a different situation confronts us. Nature is not an intentional product; rather, it is the raw, given material with which we begin. We can see the task of science as discovering nature and creating categories to make sense of nature. Carlson compares the role of science here to the role of Walton's imagined artists who dream up farfetched categories to make otherwise mediocre artworks appear to be masterpieces. Such artists would "take the works as given, and create the categories in virtue of them, and with an eye to making them appear aesthetically good" (p. 92). Carlson wants to suggest that the natural sciences do just the same sort of thing, starting with a given – nature – and creating categories with an eye to making nature appear aesthetically good. But surely, at first glance, it does not seem that science has aesthetic goodness on its agenda. What then is the connection between the two? Carlson's response is that:

> a more correct categorization in science is one that over time makes the natural world seem more intelligible, more comprehensible to those whose science it is. Our science appeals to certain kinds of qualities to accomplish this. These qualities are ones such as order, regularity, harmony, balance, tension, resolution, and so forth. If our science did not discover, uncover, and/or create such qualities in the natural world and explain the world in terms of them, it would not

> accomplish its task of making it seem more intelligible to us; rather, it would leave the world incomprehensible… Moreover, these qualities that make the world seem comprehensible to us are also those that we find aesthetically good. Thus, when we experience them in the natural world or experience the natural world in terms of them, we find it aesthetically good (p. 93).

So, since nature is discovered and not (like art) created, the determinations of categories for nature are not prior to and independent of considerations of aesthetic goodness. Rather, "the determinations of categories of nature and of their correctness are in an important sense dependent upon aesthetic considerations" (p. 93), and so we get a justification for the positive aesthetics view. When we perceive nature in its correct (scientific) categories it appears aesthetically good, since the way we come up with those categories involves (in some way)[70] taking aesthetic goodness into account.

Let us take this as the primary explanation of and argument for the science-based positive aesthetics thesis. Now, the question I want to pose is whether it is important to this argument if we adopt one of the views about science – scientific realism, constructive empiricism, or anti-scientism – that I have described in the previous chapters. Will adopting any of these positions make the argument for positive aesthetics seem less plausible, or is the argument equally strong no matter our position in the scientific realism debates?

### Scientific Realism and Positive Aesthetics

At first glance, a scientific realist view of science seems to lend support to the positive aesthetics thesis. This is because a scientific realist can perhaps make the strong claim that not only do pristine natural objects *appear* to be aesthetically good, but they really *are* aesthetically good. If our scientific theories describe the truth about nature, then by employing the science-based argument for positive aesthetics perhaps we can make the case that nature really is aesthetically good. Thus scientific realism seems to allow us to endorse a very robust version of positive aesthetics.

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[70] This need not be the result of a conscious effort to incorporate aesthetic goodness.

But if we take a closer look, I think that combining scientific realism and positive aesthetics can lead to a certain tension. To see why this is, consider three striking circumstances that seem to follow if we believe that science tells us the truth about the natural world and that the science-based argument for positive aesthetics is correct. (1) Science uncovers the truth about the world, and this truth is that the natural world really does exhibit the qualities Carlson mentions, such as order, regularity, and harmony. This may already seem noteworthy. The world need not have been orderly, regular and harmonious – it could have been chaotic, jumbled, and discordant.[71] That the world is orderly and rule-governed is striking indeed. But now consider a second arresting circumstance. (2) The scientific realist who adopts the science-based argument for positive aesthetics must also recognize that the human mind seems peculiarly well-adapted for recognizing this truth about nature's order, etc. The human mind could, after all, be such that it fails to recognize the truth about the natural world. To this point these striking circumstances may seem rather ordinary, in the sense that people in our society with a scientific realist outlook have grown used to living with these ideas. Our scientific response here is generally to note that a world that did not exhibit order and regularity would probably not be a place suitable for organisms such as us; moreover, our success navigating the world is due to our minds' abilities to track truth. Were our minds differently adapted, we would simply not have survived long enough to take note of these striking correlations between the truth about nature and the capacities of the human mind. Thus we can tell an evolutionary story to help account for the conspicuous circumstances I have mentioned.

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[71] In fact, some scientists now suggest that the world really is more chaotic, jumbled, and discordant than our traditional scientific pictures of it suggest. See (Botkin, 2000) and my footnote 75, this chapter, for more information. If this view is right, it might spell trouble for Carlson's science-based argument for positive aesthetics from the get-go.

Now, when it comes to positive aesthetics, we must add another item to the list of striking circumstances. (3) Not only is nature orderly and regular, and not only are our minds suited to recognizing the truth about nature, but we also have a characteristic sort of response to this truth that extends beyond mere cognition: we have a positive aesthetic response to nature – that is, nature seems to us to have aesthetic qualities. The key to understanding why this circumstance is striking is to follow the same pattern as with the others. We could have some quite different response to nature than we in fact have. That other sort of response could be non-aesthetic, negative, or a mixed bag. But instead we have this particular *aesthetic* sort of response to pristine nature. Why should this be so? Unlike in the science-based argument for positive aesthetics, on the scientific realist view we must think of nature's categories as existing prior to and independent of human concerns for aesthetic goodness. On the scientific realist view, the categories we find in nature are nature's own. Because of this, there is no reason that we should expect nature to have or seem to have aesthetic qualities. Can the fact that nature does seem to have aesthetic qualities be merely coincidental, or do we need another story to help explain this?

I suggest that each of these striking circumstances seems to demand some sort of explanation. This seeming need for a further explanation may be seen as a strike against an attempt to combine scientific realism with the positive aesthetics argument. Unless we can agree that one of these background stories is adequate to make sense of these bizarre circumstances, we may not want to be scientific realists who adhere to positive aesthetics. I have already mentioned that evolutionary explanations often appease us with respect to the first two of these circumstances. Could an evolutionary background story also explain the third circumstance, our aesthetic responses to nature? One attempt to offer this sort of evolutionary explanation is found in Jay Appleton's (1975) prospect-refuge theory. According to this socio-biological theory, our aesthetic responses to nature developed as our ancestors strove to maximize their survival chances by perceiving in certain landscapes opportunities to view desirable prospects or hide from predators. When sentient beings are afforded an unimpeded view of a certain landscape where they might find things to satisfy their needs, or when viewing the world from a safe place, "their perception is attended with pleasure; anxiety is set aside and relaxation is possible" (p. 71). Thus, to put it simplistically, Appleton holds that certain sorts of visual experiences of landscapes led our ancestors to develop an aesthetic sensibility towards those landscapes, and that we have inherited this sensibility. Now, when human beings perceive nature our response to it still bears a resemblance to our ancestors' pleasurable, relaxed experience. This is taken to explain why humans perceive aesthetic qualities in nature.

Offhand I can think of two reasons why we might be leery about accepting Appleton's explanation. First, it seems to go against the traditional view that the aesthetic response is fundamentally disinterested. According to the prospect-refuge theory, the very roots of our aesthetic responses are buried in self-interest. The second reason is more germane to positive aesthetics. Although some landscapes clearly provide us with fine prospects or safe refuges, others equally clearly do not. Would it not seem, then, that an appropriate aesthetic response to such landscapes would be negative? If so, then this would speak against the positive aesthetics thesis. No doubt there are sophisticated ways to defend Appleton's argument against these considerations, but for now I simply wish to point out that it is far from obvious that prospect-refuge theory provides the right sort of background story to explain our third circumstance.

Another sort of explanation for these coincidences that is often advanced is a theistic one according to which these circumstances should not be seen as shockingly coincident since both the world and the human mind were created by the same Being who deliberately designed them to work in consonance.[72] A theistic explanation would presumably account for the third circumstance equally well in terms of a Creator's design. But this background story is problematic, too, since many scientific realists would not be willing to take on this theistic baggage just to make sense of their worldview or their argument for positive aesthetics.

I am not concerned here to defend or argue against either of these background stories. Instead, I want to reiterate that when we attempt to conjoin scientific realism and the science-based argument for positive aesthetics, we find ourselves with a set of circumstances that seem to demand an explanation. This explanation will take the form of some background story or stories that attempt to make sense of the conspicuous circumstances detailed above. It is at least not immediately evident that any one of these background stories will be palatable to scientific realists across the board. Thus we find that a certain tension arises if we try to combine a scientific realist position with the science-based positive aesthetics argument. This certainly is not damning for either scientific realists or for the science-based argument for positive aesthetics, but at least it looks like an undesirable consequence, an extra hoop to have to jump through.

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[72] The idea that scientific realism might demand a theistic explanation was first suggested to me by Prof. Rob Koons, University of Texas at Austin, in the context of a debate about the existence of God, Fall 1998.

## Constructive Empiricism and Positive Aesthetics

Now we can turn to constructive empiricism. A constructive empiricist would presumably not want to adhere to the strong claim that pristine nature *is* aesthetically good. This is simply because pristine nature must include unobservable entities and constructive empiricists do not want to have to make any claims about what unobservable entities really are or what properties they have. So, someone like van Fraassen would certainly not want to commit to the strong positive aesthetics thesis.[73]

But when it comes to the weaker claim, that pristine nature *appears* aesthetically good, the constructive empiricist would not face this same quandary because unobservables do not appear to us at all, by definition. So, could a constructive empiricist otherwise be content with the weak positive aesthetics claim? If we leave aside for a moment the fact that the scientific realism debate (in the narrow sense) involves a dispute over unobservable entities, and instead look at the spirit of van Fraassen's position, we will see that constructive empiricism and positive aesthetics work together nicely. Recall that constructive empiricists maintain that the aim of science is empirical adequacy, not truth right to the level of unobservable entities. Thus the picture painted by constructive empiricism is one in which science finds some empirically adequate 'story' to account for all of the observable phenomena of nature, an explanation that will save all the appearances but which need not strive for truth. This picture of science is reminiscent of that advanced by instrumentalists around the turn of the 20th century, and generally meshes with most anti-realist (though not what I have called *radical* anti-realist) views. The emphasis here is on the fact that science is a story that *we* tell to try to make sense of a given natural world – we need not think that our scientific theories tell nature's own story.

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[73] Nevertheless, a modified form of this strong thesis might be possible, e.g. 'observable pristine nature is aesthetically good'. There is no particular reason that a constructive empiricist could not be a realist about aesthetic value though, as we shall see, nothing would compel the agnostic to this view.

In spirit, this anti-realist picture of science resonates well with the science-based argument for positive aesthetics. In that argument, nature is also given, and science attempts to find ways of making nature seem comprehensible to us. Truth need never enter the picture here either. What is important is that science gives us an adequate explanation for the phenomena of the world that would otherwise be confusing. If we follow in the spirit of an anti-realist view of science, the science-based argument for positive aesthetics seems very plausible indeed. Both view science's task as providing us with an explanation of the world that makes it more comprehensible to us. Thus science is better seen not as uncovering the truth about regularities in nature, but as writing stories that make nature *appear* regular to us.

Note that conjoining constructive empiricism and the science-based positive aesthetics argument does not leave us with the scientific realist's circumstances for which we would want explanations. Constructive empiricism does not require that nature really be orderly, regular, and harmonious – it need only be given.[74] Scientific theories are formed just so that they will make sense of nature for our minds, and those theories need not tap into the true nature of nature. Thus the relation between our minds and nature is not surprising at all. Finally, the fact that nature seems to have aesthetic qualities should not be surprising. To the scientific realist it must seem that the determinations of categories for nature are made prior to and independently of considerations of aesthetic goodness, for the categories inhere in nature. But the anti-realist need not think this. Since she is agnostic about the true categories of nature, she can freely see the scientific enterprise as one that starts with the given (nature) and imposes categories on it. In this latter case, the fact that we have an aesthetic response to nature is no surprise since we choose to impose categories on nature that take aesthetic considerations into account. If nature should just happen to be such that it appears beautiful to us, that would be surprising; if we choose categories to view nature and that choice causes nature to appear beautiful, that would not be so surprising.

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[74] A constructive empiricist probably would, in fact, think nature regular, orderly and harmonious – for how else would she explain the fact that theories continue to be empirically adequate across time and space? The point here is that *qua* constructive empiricist she is not theoretically committed to nature's orderliness, whereas the scientific realist is.

### Anti-Scientism and Positive Aesthetics

As in the previous chapter, a stronger challenge comes from anti-scientism. It is almost immediately evident that if we adopt what I call a negative anti-scientist position, then the science-based argument for positive aesthetics is in hot water. For if we shouldn't pay any heed to science then we should disregard any explanation of positive aesthetics that is founded on science. Carlson admits that his positive aesthetics argument must be qualified so that we see its dependence on the privileged position given to science in our culture:

> The justification developed here… regards the aesthetic appreciation of nature as significantly informed by science and positive aesthetics as intimately related to the development of science. Consequently, although aesthetic appreciation of nature is perhaps informed by

> whatever world view is available, it seems that, outside of the temporal and spatial boundaries of the scientific world view, it is not informed by science. Thus, positive aesthetics may not be a justifiable position outside these boundaries (p. 94).

In non-scientific cultures, then, Carlson's argument for positive aesthetics would pull no weight. The idea Carlson wants to promote is that since our society is in fact a scientific society, for us (at least the weak version of) positive aesthetics is justified by his argument. But of course, negative anti-scientists would rather we not have a scientific society. Thus, even though positive aesthetics might be justified for us here and now in a scientific society, it should not be justified on these grounds because we should not be in a scientific society! If anti-scientists had their way, we would need to abandon positive aesthetics or base it on something other than science.

But would a positive anti-scientist position equally challenge the science-based argument for positive aesthetics? Positive anti-scientists, as I described them in the previous chapter, wish to give ear to more stories than just the scientific ones. In the context of the positive aesthetics thesis, this would involve finding some way to argue for positive aesthetics that does not rely exclusively on science. This could be done by advancing the other sorts of arguments for positive aesthetics that Carlson mentions, namely those that view nature as non-aesthetic, those that view nature as sublime, or those that view nature as created by God. But suppose that the positive anti-scientist wants to retain the basic structure behind the science-based argument for positive aesthetics: aesthetic considerations play an important role in determining the stories that make the world seem more comprehensible to us. According to the positive anti-scientist, some of these stories are scientific stories, but others could come from different sources. Now the question is, which other stories will support the positive aesthetics thesis as well as the scientific stories Carlson considers? Some of the concerns that will arise include whether other candidate stories in fact do try to make the world more comprehensible to us and whether they in fact do encourage positive aesthetic appreciation of nature. Let us consider some possibilities here.

Something like Emily Brady's imagination-based approach would not be helpful as a way of providing positive aesthetics-justifying supplementary stories. This is because, as Marcia Eaton (1998) points out, one of the tendencies of the imagination is to demonize natural objects. For example, we often imagine swamps as "inhabited by various kinds of slime monsters" (p. 176), thereby robbing them of aesthetic appeal. So long as the imagination demonizes nature we will not view all of nature as aesthetically good, and the positive aesthetics thesis is wrong. Note that there is nothing comparable to imaginative demonizing done by our scientific stories.

But is there anything inherently wrong with demonizing natural objects with our imaginations? If so, then perhaps this practice should be avoided, and so the positive aesthetics thesis may be right, after all, when based on our properly imagined stories. We are again reminded of Brady's insistence that we should 'imagine well.' If we use our imaginations appropriately, perhaps we shall only come up with stories about nature that make it appear aesthetically good. But as discussed in the previous chapter, Eaton argues convincingly that 'imagining well' is a concept that probably needs to be filled out by falling back on science. Thus, scientific stories will still need to be given primacy here – the very thing the positive anti-scientist seeks to avoid.

Another problem with Brady's imagined stories is that we cannot expect there to be agreement about the kind of imagining we should do about the natural world. What one person imaginatively sentimentalizes (a young girl perceives the swamp as beautiful because she imagines it as an Eden for the cute frogs who inhabit it) another demonizes (a young boy perceives the swamp as wretched because he imagines it a dangerous zone of quicksand and disease). Or an imagined story that helps one person make sense of the world might simply confuse another person. Compare this kind of disagreement to what we would get from scientific stories, on Carlson's view. Anti-scientism aside, we have scientific stories that most people in our culture can agree upon, and all these stories serve the purpose of making the natural world more understandable for us. It is not at all clear how the imagination could provide us with stories about nature that we can come to a similar consensus about unless, again, the imagination is somehow curbed by scientific facts. Brady's positive anti-scientist approach would therefore fall well short of justifying positive aesthetics, for it seems to allow for negative aesthetic judgments about nature and leaves too much room for disagreement about the qualities natural objects have.

What about Heyd's 'many stories about nature'? Could these be used to argue for positive aesthetics? We may run into the same problem of demonizing nature with Heyd's stories. For not all folkloric, cultural, artistic, etc. stories bring out only the aesthetically good qualities of natural objects. Unlike science, which aims at providing us with a story about regularity, harmony, and so on[75], some other stories about nature do not make sense of nature, but instead emphasize its random, chaotic, senseless character. I think here of stories like the broad Heraclitean theme of an unstable, ever-changing world of becoming, or religious stories that make the creator and his/her intentions with respect to nature out to be unknowable, ineffable. Or consider artistic stories that try to shake up prevalent worldviews in an attempt to challenge an already comprehensible way of looking at the world. Instead of leading us to make judgments that nature is aesthetically good, such stories may make the world seem less understandable, and so frightening, dark, and aesthetically bad. What is to say that we should not listen to those kinds of stories as well as the stories that make nature appear orderly and aesthetically positive?

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[75] A noteworthy challenge to this claim comes from the so-called "new ecology" movement, which provides the Heraclitean fly in science's generally Parmenidean ointment. The idea behind the new ecology movement is that the natural world is not orderly, regular, and harmonious, but is constantly in flux. Thus science should not try to make nature out to be orderly, etc., but must strive to find "new metaphors for nature" so that we begin "viewing nature as characterized by chance and randomness" (Botkin, 1990, p. 129). If the new ecology is established as part of our mature science, Carlson's argument for positive aesthetics may itself be in trouble, or at least be no better off than the 'other stories about nature' I consider here. For a thoughtful consideration of the impact of the new ecology on positive aesthetics, see (Simus, 2005).

One thing we could certainly not do here is merely choose to pay attention to the stories that make nature more comprehensible for us. This would be like employing Walton's 'beauty-making criterion', as Heyd does, so as to listen to those stories about nature that make it appear aesthetically pleasing to us. But this would certainly not help us justify positive aesthetics, since it would do no more than show that we want to see natural beauty wherever we look.

A better approach might be to follow the same sort of strategy we saw in the last chapter, where positive anti-scientists try to find ways of identifying *appropriate* stories about nature. In that chapter we looked at some of the challenges that arise as positive anti-scientists try to come up with criteria for the appropriateness of stories about nature. Those challenges will recur here, and now we can add to them the question of whether all well-established, object-directed, effective stories will in fact justify the positive aesthetics view. To address this last worry one might try to argue, for instance, that stories about nature simply do not become well-established or remain well-established if they only serve to confuse us about nature. Thus all our well-established stories should serve the purpose of making nature more comprehensible to us. But some work would need to be done here to show why there is a link between being well-established and being a story that makes nature comprehensible, especially in light of the examples I gave above. Or one might argue that object-directed stories are only ever advanced for the purposes of trying to make nature more understandable. On this view some well-established stories like the one about an inscrutable deity might make the natural world seem less comprehensible, but only because those stories are meant to describe the deity and are not object-directed toward nature itself.

While this sort of positive anti-scientist approach seems promising, it ultimately runs into the same sorts of problems we saw in the last chapter. In our society, we generally view scientific stories as the ones that best make nature seem comprehensible to us. Scientific stories are our best-established, most object-directed, effective stories. While a few non-scientific stories might come close to embodying these qualities, these other stories are certain to be small in number. And even among those few, it is difficult to imagine that we will find the same sort of consensus that we currently find about our scientific stories. Thus we find that we will have to sacrifice something in the way of objectivity and confidence if we allow non-scientific stories to become part of the argument for positive aesthetics. Moreover, positive anti-scientists presumably want to promote many stories besides science's stories, and in order to do so they will have to relax the standards for determining the appropriateness of stories. This will lead to the undesirable consequence of allowing too many stories to count as appropriate, since some of these stories may be such that they make nature appear ugly, and so would not help to defend the positive aesthetics thesis.

The foregoing examples are meant to show the sorts of problems we will run up against if we try to downplay the role of science in the argument for positive aesthetics. Any attempts to find other stories that can stand alongside scientific stories are likely to be frustrated. In the science-based argument for positive aesthetics, science serves two main purposes. First, it makes nature more comprehensible to us. Second, it serves as a story that most people in our culture can agree on. Unless we can come up with some other institutions that, like science on Carlson's view, tell us stories that always serve these two purposes, then the attempt to look for other stories to back up the positive aesthetics argument seems fruitless. But most non-scientific stories do not serve these two purposes very well. Broadly speaking, not all kinds of stories try to make the natural world more comprehensible to us, and unless we already adhere to some sort of positive aesthetics view, there is no obvious reason to choose to ignore those that fail in this respect. Among those stories that do make nature more comprehensible to us, there will often not be general agreement that we should listen to these stories. This is one way in which relying on the imagination or on mythological stories about nature that are perceived as farfetched would fail to justify positive aesthetics.

A final concern for the positive anti-scientist has to do with the coherence of non-scientific stories with each other. One unique feature of science is that it always strives to give a story about nature that does not conflict with other scientific stories. As the scientific community determines whether it will accept a proposed new scientific theory, a chief consideration is whether that theory is consistent with current mature scientific theories.[76] There is no comparable community to watch over non-scientific stories, unless that community comes from within science itself. Apart from science, we simply do not demand that our folktales, myths, religious stories, artistic stories and the like not conflict with each other when they describe nature. If all our stories about nature are consistent with each other, then this will in the long run lead to a more comprehensible overall story about nature and will bring out the positive aesthetic qualities of nature. But if we listen to non-scientific stories as well, inconsistencies are sure to arise and these will, over time, lead us to have a more confused picture of nature and so will not ultimately justify positive aesthetics.

## Conclusion

In this chapter I have argued that the science-based argument for positive aesthetics is not immune to the scientific realism debates considered in previous chapters. The science-based argument for positive aesthetics seems to work best with an anti-realist or constructive empiricist view of science, according to which science aims at making the natural world comprehensible to us. On the scientific realist view, according to which science aims at discovering truth, the positive aesthetics argument may be able to justify a strong version of positive aesthetics, but it does so at a certain cost. That cost is that we seem forced to accept some background story or stories to explain three otherwise incredible circumstances: the truth about the world exhibits certain qualities, our minds can grasp these qualities, and we have an aesthetic response to the world. These circumstances seem to demand an explanation, but it may be undesirable for the scientific realist to have to adopt any of the background stories that could explain them. On an anti-scientist view, the science-based argument for positive aesthetics must seem misguided. For if the scientific story should not be the main story we listen to about nature, then the science-based explanation for positive aesthetics is not enough. But it is unclear how the positive anti-scientist could try to fill out the argument for positive aesthetics while retaining the basic structure of Carlson's explanation. We might make some headway towards finding appropriate stories by looking for well-established, object-directed, and effective stories, but by adding any non-scientific stories to the mix we weaken the potency of the science-based argument for positive aesthetics. What else could be added to science as an institution that provides us with stories about nature that we agree on and that make nature more comprehensible to us, both immediately and in the long run (by providing us with stories consistent with each other)? Science certainly seems like the best candidate for such an institution. Without science playing the role it does in Carlson's argument, positive aesthetics seems far less plausible.

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[76] This is not to say that no proposed theory that is incompatible with an extant theory can ever be accepted by the scientific community. Rather, if the proposed theory wins the day (for whatever reason), the scientific community will then look to alter the other theories with which it conflicts. Of course, communication between different branches of science is imperfect, as are individual practitioners of science – but science strives for coherence among its theories.

Perhaps it is again best to conclude by noting that the philosophy of science work should be done first. As philosophers of science we should determine whether to be scientific realists, constructive empiricists, or anti-scientists of one sort or another. As with the cognitive approach, we may try to keep the structure of the science-based argument for positive aesthetics under any one of these views about science. But then we must note that the positive aesthetics thesis follows best from a constructive empiricist or anti-realist view of science, is somewhat strained under a scientific realist view of science, and is less credible under an anti-scientist view.

# Chapter 5: Conclusion

In this final chapter I will offer my thoughts about the importance of this project and about the conclusions I think we can draw from it. If it accomplishes nothing else, I hope this thesis adequately defends the idea that it is worthwhile to pay attention to debates about realism in science since the different views about science that I have described affect scientific cognitivism, the cognitive approach in natural aesthetics in general, and the positive aesthetics position. It is not enough for any kind of aesthetic theory to appeal to 'scientific knowledge' *simpliciter* since there are several different, incompatible views about how we should view scientific knowledge. In the following sections I lay out my own more specific conclusions about various aspects of the foregoing discussion.

## The Force of Challenges from the Scientific Realism Debate

When all is said and done, the narrowly construed scientific realism debate poses no serious threat to scientific cognitivism. I think it is safe to say that our beliefs about unobservable entities rarely play any significant role in our aesthetic experience, even though (as I argue in Chapter 1) it is possible that they might do so on occasion. This possibility derives from the fact that scientific cognitivism proposes that we perceive macroscopic natural objects as falling under categories, along with the fact that the categories we use can seemingly depend on what we believe about unobservables. Even in the rare cases in which our beliefs about unobservables may play some role in our aesthetic judgments about macroscopic natural objects, the constructive empiricist should not be fazed. It is true that the scientific realist may be right about the existence of some unobservable entities, and that this belief may affect the categories the realist employs. This in turn might allow the scientific realist to make better aesthetic judgments about some natural object that is comprised of the unobservable entities. But the scientific realist may also be wrong about the existence of the unobservable entities his theory posits. When this occurs, any categories derived from that false belief and any aesthetic judgments that result from employing those categories are mistaken. In such a case, the constructive empiricist will be better off. And it is just for reasons like this that a constructive empiricist remains agnostic about the existence of unobservables – she wishes to avoid risky ontological commitments. As such, I think the constructive empiricist would welcome the suggestion that her aesthetic judgments might be impoverished compared to the realist's since the likelihood of her making mistaken aesthetic judgments under scientific cognitivism is less than the realist's.

Nor do I think the positive aesthetics thesis is seriously challenged by the debate about unobservable entities. As I argued in the last chapter, an anti-realist view about science maps onto the science-based argument for positive aesthetics almost perfectly. Interestingly, a scientific realist view is a bit strained when coupled with the argument for positive aesthetics. This is because taking a scientific realist view leaves us with a series of circumstances that seem to demand an explanation. While we are accustomed to evolutionary background stories that explain some of these circumstances, in order to explain our characteristic aesthetic response to nature we would need to adopt a different background story. While this is certainly not impossible, it is an extra bit of baggage that the scientific realist who advocates positive aesthetics will have to carry around. How burdensome this baggage is will depend on how readily a given scientific realist will accept one of the background stories. Though I gave some reasons for being wary of the prospect-refuge theory and the theistic background stories, it is likely that a fair number of scientific realists will find one or the other of these background stories plausible. There might be other background stories that would serve to explain this circumstance as well. Therefore, the strain from positive aesthetics on scientific realism is relatively slight.

## A Tension Between Scientific Cognitivism and Positive Aesthetics

On a related note, I find it noteworthy that one conception of science seems to best back up scientific cognitivism while a different conception of science seems to best back up positive aesthetics. A scientific realist view, I have argued, gives the strongest support to scientific cognitivism, while an anti-realist view about science (such as van Fraassen's constructive empiricism) best supports the science-based positive aesthetics thesis. This is remarkable because some thinkers – most notably Carlson and Rolston – use scientific cognitivism as an initial basis for their argument for positive aesthetics (as I noted in Chapter 4). But if different and incompatible views about science underlie each of these aesthetic theories, then perhaps they should not be linked in the way that these thinkers attempt. Or, at least philosophers who attempt to conjoin the two views should be wary of the tension between the two positions and have in mind a strategy for overcoming it.

There are at least two ways to resolve this tension. First, one can become a constructive empiricist (or another sort of anti-realist) and accept the conclusion that our aesthetic appreciation as agnostics may be limited where unobservable entities are involved in the formation of categories we perceive nature as falling under. As discussed above, accepting this conclusion should not be too unpalatable. Then, as a constructive empiricist, the positive aesthetics view will follow more naturally. The other option is to be a scientific realist who accepts one of the background stories that explain the coincidences that seem to arise if we couple scientific realism with positive aesthetics. As I have mentioned, many scientific realists may be willing to adopt one of these background stories, and so positive aesthetics will follow from their conception of science. Thus, there are ways to resolve the tension here. But again, cognitivists should not indiscriminately appeal to scientific knowledge in their aesthetic theories without realizing that different views about scientific knowledge can best support these theories.

## The Force of Challenges from Anti-Realism

The broader scientific realism debate that concerns the dominant position our society gives to science offers a more significant challenge to both scientific cognitivism and the cognitive approach. Negative anti-scientism, as I defined it, does not support scientific cognitivism in the least. If our society should not heed the voice of science at all, then a science-based theory of natural aesthetics stands little chance of success. The cognitive approach itself is challenged by negative anti-scientism. For if science doesn't provide us with the correct categories for perceiving nature, it is hard to imagine what else we could agree *does* provide us with these categories. But positive anti-scientism does not paint quite as dire a picture for the cognitive approach. The positive anti-scientist suggests that scientific stories do indeed provide us with some correct categories for perceiving nature aesthetically, but that there are other legitimate stories we should also heed. These other stories about nature would also affect the categories we perceive natural objects under and so would affect our aesthetic judgments about nature. But in order for the robust version of the cognitive approach to remain true to its mandate of appreciating things as what they really are, these non-scientific stories must be able to shed light on natural objects for what they really are. Any story that fails to do so is *ipso facto* inappropriate. The positive anti-scientist's challenge is to find some criteria for the appropriateness of stories so that they can be allowed to stand alongside scientific stories as illuminating nature as what it really is. Even on the weaker belief-cognitivist view, I have argued, some stories about nature will be inappropriate, and so belief-cognitivists must work to find criteria for appropriateness that explain why we should heed some stories about nature and not others. I argued in Chapter 3 that in our society, this task of finding standards for appropriate non-scientific stories will be extremely challenging. I'd like to push that line of thinking ahead a bit here to attempt a final defense of both the cognitive approach and of positive aesthetics from the challenge of positive anti-scientism.

## Relativism Revisited

Anyone who picks up this thesis is likely to be a member of a scientific society. Indeed, Carlson points out time and again that our society is, in fact, a scientific society. When we peek through our curtains we cannot help but see the world through the lens of science. One might argue that many of the categories we employ are commonsense categories and not scientific ones. But it is hard to overestimate how profound an impact science has had on our perception. When we look at the stars we 'see' something quite unlike the vision of the heavens any pre-scientific commonsense would lead us to. When we stroll through a forest we perceive an environment quite different from the forest a person from a non-scientific culture could perceive. Thus even though we can be theoretically opposed to being in a scientific culture, we are all, practically speaking, scientific perceivers of the world. While negative anti-scientists in our culture might deplore this fact, even for them there is no escaping it. Thus the proponent of the cognitive approach might be on firm ground in insisting that science gives us (i.e. our culture) the correct categories for aesthetically appreciating nature. These are, after all, the categories through which we perceive the world, and there is no present alternative – for us – to seeing the world that way. This could perhaps change over time, and perhaps anti-scientists will help to bring this change about. But for now, for us, nature appears to us as categorized by the natural sciences. While individuals may also see nature through other categories – perhaps categories they have imagined, or ones inherited from folktales or a religious tradition – these are not 'correct' for our society as a whole in the way that scientific categories are. So, when we talk about aesthetics and the desire to make objective judgments about nature that are correct for our society, the only categories we can safely appeal to as being across-the-board correct are scientific (and common-sense) categories. Compare this to someone who has their own, non-standard way of approaching works of art. In order to have an evaluative discussion about works of art with others, they must fall back on the categories accepted by the art-critical community. Those are the only categories we can say are correct for that society.

This is, of course, a re-statement of the relativist twist I mentioned towards the end of Chapter 3. There I argued that relativizing the correctness of stories about nature to cultural contexts might be problematic, inasmuch as it requires the adoption of undesirable relativist theoretical baggage. But the relativist argument may be the only argument that will speak to the anti-scientist. For the anti-scientist there is presumably no way we could get the final, true picture of nature or nature's own categories. So if we are to have 'correct' categories at all, this correctness must be relative to individuals or a society. Correctness relative to individuals leads to subjectivism in aesthetics. Correctness relative to a society leads to relativism in aesthetics, but allows us to keep a discussion about natural aesthetics alive. If the alternative is getting rid of talk of 'correctness of categories' altogether, then this relativist hook may be worth biting.

A similar tack can be taken with positive aesthetics. This is simply to reiterate what Carlson has said, that in non-scientific societies the science-based argument for positive aesthetics will not pull any weight. But in our society, it certainly does pull weight, just so long as we agree that the natural sciences do provide us with stories about nature that make it seem more comprehensible to us. For us it does pull weight because ours is a scientific society. While this will certainly not support the strong positive aesthetics claim that pristine nature really is aesthetically good, it will support the claim that to us pristine nature appears aesthetically good, inasmuch as we see it through the lens of a scientific worldview. And since even the most ardent anti-scientists among us are not – here and now – at liberty to dispense with this scientific worldview, the science-based argument for positive aesthetics must have some appeal even for them. Thus we have an argument for positive aesthetics that is convincing for our society.

I think that taking this relativist line provides the most promising way of advancing both the cognitive approach and the positive aesthetics thesis to anti-scientists. The proponent of these views need not herself take on relativism's theoretical baggage, but when she is talking to anti-scientists this may be the best way to defend the cognitive approach and positive aesthetics. If this sort of defense is successful, as I argue it can be, then we have further evidence of the remarkable flexibility of the cognitive approach and an argument for positive aesthetics that should satisfy.

## The Flexibility of the Cognitive Approach

In the end, I think that the most remarkable feature of the cognitive approach illuminated by this thesis is its flexibility. We can use the cognitive approach when analyzing art and when analyzing nature. We can use the cognitive approach to help us establish the true categories for art or nature (knowledge-cognitivism), or we can adopt the 'no-truth' strategy for interpreting the cognitive approach (belief-cognitivism) and still retain many of the merits of the view. We can use scientific knowledge to fill out the cognitive approach to the aesthetic appreciation of nature, thus adhering to scientific cognitivism. We can apply scientific cognitivism as scientific realists or as constructive empiricists, even though our judgments may differ where categories that depend on unobservables are concerned. Or, although this may be less impressive than scientific cognitivism, we can try to find appropriate non-scientific stories to help us establish the correct categories for perceiving nature. One way to do this is to couple the cognitive approach with a relativist view about the correctness of categories. Remarkably, this can still leave us with a fruitful aesthetic theory that allows us to move beyond subjectivism in natural aesthetics.

So, although I have argued that cognitivists in natural aesthetics should be more conscientious about what they intend when appealing to scientific knowledge, I conclude that there are reasonable cognitivist options open to thinkers who adhere to any of the views about scientific knowledge I have discussed. Although it seems only right to choose a philosophical view about science prior to and independently of choosing a philosophical view about the aesthetics of nature, cognitivists who have not made up their minds about scientific knowledge can rest assured that there is room to work with their cognitive approach under nearly any view about science.

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*Note: In order to help put things in proper historical perspective, in-text citations refer to original dates of publication, where applicable, but include page numbers from the editions I used. Here I list the editions I used and include the original publication date at the end of each entry.*

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